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ORIGINAL LECTURES.

CLINICAL LECTURE

ON SURGICAL DISEASES OF THE ABDOMEN.

Delivered at the College of Physicians and Surgeons, Chicago, Illinois,

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Reported by WILLIAM WHITFORD.

GENTLEMEN,—Having completed the subject of injuries and lesions of the brain and pleural cavity, we have reached this evening the important subject of "Abdominal Surgery." It is well to make the statement that abdominal surgery as it is to-day is a creation of recent years; hence you will excuse me if I shall refer to the surgical treatment of diseases of the contents of the abdominal cavity that have been heretofore, and by some are even to-day, considered as belonging to internal medicine. The modern method of wound-treatment has created a new era in the treatment of affections of the abdominal organs. It has created new operations; it has distinctly enlarged the field of surgery. The principal reason for this advancement we necessarily attribute to the discovery of the comparative immunity with which the abdominal cavity can be opened, both for exploratory and for radical measures. Like all other serous sacs or linings, in the language of Schroeder, "the peritoneum can be cut, torn, and opened without any serious results,"—in fact, without the disease extending beyond the reparative process. We are acquainted with the readiness with which the peritoneal surface contracts adhesions, provided the reproductive or productive process is not complicated by wound-infection. It is the early creation of adhesions of the intestinal organs which we shall consider more particularly in treating of lesions and injuries of the abdominal organs. For the treatment of so-called internal lesions, we will consider (1) the propriety and justifiability of opening the abdomen in cases of diffuse peritonitis, instead of, as heretofore, *relying upon opium-treatment, rest, and absolute diet.* With the view of securing rest of the inflamed serous membrane, and thus obtaining the essential primary conditions for union between the inflamed organ and the serous membrane, we to-day, under certain conditions, interfere by surgical procedures. It is in cases where the process tends by its diffuseness towards producing a shock of the system from the peripheral irritation of sentient nerves, or where the process of inflammation extends to subjacent abdominal organs and thus threatens life, that we interfere by a surgical operation to relieve depressing symptoms, and, if possible, to remove the primary cause.

The first condition we shall consider is an excessive tympanites. A meteorismus may be of a twofold character, according to the primary cause which produces the peritonitis.

In case of perforation-peritonitis, where we have a direct communication between the peritoneal cavity and the intestinal tube (an escape of gas into the peritoneal cavity), we have a meteorismus. In pointing to indications for the relief of distention by surgical interference, it is well to call your attention to the fact that in case of the presence of gas in the free abdominal cavity we have at once displacement of the free abdominal organs,—a dislocation, as it were, indicated *intra vitam* by a movement of the liver in an upward direction. This is considered an important diagnostic feature of meteorismus depending upon dilatation of the intestinal tube and the presence of gas in the peritoneal cavity. An early displacement of the liver will be indicated by an absence of dulness over its normal area,—a tympanitic resonance over that portion of the organ which covers the abdominal cavity. In perforation-peritonitis the mechanical removal of the meteorismus may be accomplished by simply perforating the abdominal wall or puncturing the peritoneal cavity. In dilatation of the intestinal tube, the true meteorismus in cases of diffuse peritonitis, a procedure which we term "enterocentesis" is accomplished by the introduction of a small hollow needle thoroughly disinfected. This is said to be harmless, as no one claims that puncture has been followed by the formation of a fæcal fistula. But, if you remember the œdematous condition and the absence of muscular contraction, you can readily conceive that after puncture by a small instrument of

less than two millimetres in diameter, on account of the absence of muscular contraction the opening may remain patent, and consequently allow of an escape of the intestinal contents, which may give rise not only to local infection, but to a meteorismus in the peritoneal cavity. If you have occasion to puncture the intestine, the puncture should be made obliquely, so that the canal may close in a valvular manner: consequently, the precautions to be exercised are (1) to select a small needle, made thoroughly aseptic, and (2) to puncture the intestine in an oblique direction. You must not expect that by resorting to enterocentesis the entire meteorismus will disappear, unless it is tympanites due to the presence of gas in the peritoneal cavity. The distended bowel at the point of puncture will collapse by the escape of intestinal gas, but, on account of the absence of contractility in the intestinal track, a great deal of gaseous accumulation will remain: consequently, we are ready to admit the correctness of the conclusions formulated by the Academy of Medicine of Paris, which, after a long and tedious discussion of this question, said of the operation of laparotomy, that it is comparatively free of danger, that it will remove distressing symptoms, and that it is a justifiable surgical procedure in well-defined cases.

By a perforation-peritonitis we understand that which is produced by a perforation of the abscess; by a perforation, again, of any portion of the gastro-intestinal canal and an escape of its contents into the peritoneal cavity. It has been shown by experiment that escape of the pathological products or of the contents of the intestinal canal of the stomach will take place on the right side of the peritoneal cavity, and that, primarily, the product of effusion will occupy the same side, —gravitating, as it were. It is determined by the attachment of the mesentery, which, you will recollect, is attached in an oblique direction from left to right: consequently, the products of effusion will gravitate towards the right of the inguinal region. On the left side there is no obstruction until the fluid or product of perforation reaches the pelvic cavity. While products devoid of septic germs may become localized in this particular region, not being able to effect entrance into the left side on account of the presence of the mesentery and the convolutions of the intestines, giving rise to a protective peritonitis in the region where perforation has occurred, yet by means of the peristaltic action of the intestines the product containing septic germs in a remarkably short time becomes diffused throughout the peritoneal cavity, and thus excites primarily diffuse septic peritonitis.

In case perforation has taken place, we have in the first place the clinical evidences of shock from the primary effect of the product of effusion upon the serous membrane; in the second place, evidenced clinically by the presence of gas in the peritoneal cavity; and, in the third place, by all the clinical features indicative of septic peritonitis.

Conservative treatment in cases of this kind, by the administration of opium, rest, absolute diet, etc., means simply death. Surgeons have expanded the field of usefulness, and in cases of perforation-peritonitis invariably advise laparotomy as a curative measure. A laparotomy under antiseptic precautions is (1) devoid of any immediate or remote danger; (2) it relieves promptly the meteorismus; and (3) it tends to remove the primary cause of the peritonitis by removing all of the products of effusion from the abdominal cavity and the primary source of infection.

If, for instance, a perforation-peritonitis should follow a perforating ulcer of the stomach, laparotomy would first have for its object the removal of the products which have escaped from the perforation. Carry a clean sponge moistened with antiseptic fluid into every nook and corner of the peritoneal cavity; search diligently for the point of perforation, excise the ulcer, and close the stomach definitely with two rows of sutures. If perforation take place through the lodgment of a foreign body,—circumscribed, suddenly becoming diffuse,—a laparotomy has for its object the removal of the products of effusion. You should search unceasingly for the point of perforation, in order to remove the foreign body and close the intestinal tube. So it may be laid down as a maxim that in all cases of circumscribed or diffuse peritonitis due to the entrance of a foreign substance into the peritoneal cavity, laparotomy is indicated. In other words, a surgeon does not do his duty by inaugurating what is called a conservative course of treatment.

I can readily understand that when the

young practitioner meets with his first case he is liable to hesitate and shrink from the responsibility; but in cases of this kind, desperate as they may appear in character, with a tendency to destroy life almost without exception, we are justified in resorting to desperate means. In the first place, make an absolute and positive diagnosis by carefully considering the history of the case, ascertaining the primary cause by finding out how the perforation has taken place. In case there are no indications for deviating from the ordinary rule, you should make the usual incision through the linea alba: for instance, if the abscess is primarily in the abdominal parietes or between some of the more superficial organs and the peritoneal cavity, cut down directly upon the abscess, thoroughly disinfect it, and from there gain entrance into the peritoneal cavity, and, if favorable indications present themselves, perform laparotomy in the usual manner.

Suppurative peritonitis is another indication for the performance of this operation. To-day, with the immunity offered by antiseptic surgery, it is indicated in almost every case. It is indicated because the presence of pus in the free peritoneal cavity will destroy life by the constant entrance of ptomaines into the circulation; in other words, by a continued fever produced by the absorption of the products of putrefaction in the peritoneal cavity. Girard has collected sixteen cases of laparotomy. Albert enlarged the statistics and mentions twenty cases, and we are informed that the operation was followed by death in only one instance.

Another question which will present itself to you is how to differentiate an ordinary chronic from a suppurative peritonitis. In the first place, the history of the case must guide you. If you have a history of perforation or of septic infection as a result of the primary cause of the peritonitis, the probability is that the product of exudation is pus and not serum. Again, if the case assume a chronic form, attended by gradual distention from the accumulation of pus in the cavity,—in other words, if the physical symptoms indicate the presence of a fluid which does not yield to absorption, with a continual rise of temperature, profuse sweating, and more particularly an œdematous condition of the abdominal parietes,—you have incations of the presence of suppurative peritonitis; but a positive diagnosis is possible only by resorting to exploratory puncture, which should always be practised if any doubt remain as to the character of the pathological accumulation. A diagnosis once made, the operation is easy: opening the abdominal cavity through the linea alba just above the bladder, making only an incision sufficiently large to introduce a small drainage-tube, placing the patient in a proper position to evacuate the contents of the accumulation, and dressing antiseptically. Granulation occurs, and the cavity of the pyogenic membrane and the abscess becomes obliterated by the formation of cicatricial tissue between the intestinal organs and the parietal peritoneum.

Another and well-recognized form of peritonitis, only recently made a special subject of study, is the tubercular, due to the presence of tubercles either in any of the serous membranes covering the abdominal viscera, the pelvic organs, or the omentum. Statistics tend to show that in cases of this kind the ascites from the miliary tubercles is promptly relieved by laparotomy, and local circulation facilitated, as well as the future absorption of the products of effusion. In contradistinction to suppurative peritonitis, in the tubercular form it becomes your duty to make an incision sufficiently large to enable you to inspect the condition of the tubercular organs; in other words, to afford free access to the tubercular foci and to treat the tubercular lesions locally. It seems that the local application of iodoform dusted over the tubercular surface has a temporary beneficial effect in arresting, for the time being, a further development of the tubercular nodules, in limiting and favoring subsequent absorption of the products of effusion. A tubercular peritonitis you will recognize by a slowness of the process, by an absence of the distinctive features indicative of diffuse septic peritonitis; by presence of pain, first circumscribed, extending gradually as infection proceeds, but always attended by more or less ascites. You will understand that in the abdomen, as in any other part of the body, tuberculosis of any of the contents may exist independently of general tuberculosis. In case it is limited to organs amenable to extirpation, we may often obtain a radical result by removing them.

In considering abscesses of the abdomen, let us first consider the extra-peritoneal: by this I mean abscesses outside of the peritoneal cavity. The first variety is the perinephritic, or abscess which originates around the kidney, either by an intrinsic cause in the kidney itself, producing a perforation of the organ, as the presence of calculi in the kidney, producing a suppurative pyelitis, which by extension and distention gradually perforates and infiltrates the perinephritic tissue. It is that form of perinephritic abscess due to urinary infiltration. The second form is the traumatic, produced by either the direct or the indirect application of force over the renal region, as a fall from a great height produces laceration even into the adipose tissue surrounding the kidney. Another form, more serious than the ones I have described, is the so-called metastatic abscess due to infection.

A perinephritic abscess is always initiated by a high fever, which is proportionate to the area involved in the inflammatory process. It is also attended early by intense pain in the region of the kidney, — pain radiating from that region along the nerves the same as in cases of renal calculus, radiating even to the lower extremity on the corresponding side. As the product of effusion becomes copious, an effect is exercised upon the physiological functions of the organ by compression; and when the product becomes sufficiently abundant to give rise to distention of the space between the peritoneum and the lumbar muscles, the swelling becomes apparent between the lowest rib and the crest of the ilium by a preternatural bulging in a posterior direction, attended by a distention of the cavity by the overlying colon in a forward direction; consequently, attended by a change in percussing the colon in that region.

A positive diagnosis is impossible without exploratory puncture.

If you have a case of localized pain in that region, followed by a bulging of the membrane in a posterior direction, and more particularly if you have symptoms pointing towards a disturbed physiological function of the urinary organs, you have evidences of a perinephritic abscess. You demonstrate its existence by exploratory puncture. The diagnosis once made, a conservative course would be simply loss of time. The presence of pus may give rise to secondary pathological conditions in neighboring organs; the abscess, instead of deviating in a posterior direction, may bulge through the peritoneal cavity, and may even produce perforation-peritonitis by the entrance of pus into the cavity: consequently, indications for surgical interference are positive and well defined.

A perinephritic abscess should always be opened (unless indications to the contrary exist from a posterior aspect) by making an incision parallel with the spine, about two or three inches from the spinous process, commencing immediately below the border of the lowest rib, carrying the incision downward two or three inches, as the case may require, carefully dividing the tissues layer by layer,—by this I mean a careful dissection, not to blindly plunge the knife into the abscess, —on account of the importance of adjacent organs, carefully dividing the tissues down in this direction until the abscess is reached: you will then make a positive anatomical diagnosis by introducing the finger, which, when you have a perinephritic abscess, always detects the kidney in the bottom of the wound. Carefully disinfect the cavity, introduce a large drainage-tube, and keep the wound strictly in an aseptic condition.

The next form is the so-called perityphlitic abscess, the result of perityphlitis. The terms "perityphlitis" and "paratyphlitis" are usually confounded; even text-books fail to make the correct distinction between the two, which is important in order to recognize the seat of the lesion and to adopt proper measures for its relief. A paratyphlitis, as the term implies, means an inflammation of the connective tissue behind the cæcum, where it is not covered by peritoneum. It therefore means a cellulitis posteriorly of the cæcum, inflammation limited to the cellular tissue behind the cæcum, extending in an upward and downward direction. Consequently, a paratyphlitic abscess, if once well developed or well defined, will resemble to a certain extent a perinephritic abscess, because the pus produced behind the cæcum may ascend as far as the kidney without interfering with the adjacent organs. A paratyphlitic abscess, then, is the result of an inflammation originating in the cæcum itself, extending by continuity in the cellular tissue behind the cæcum, or originating primarily in the cæcal connective tissue.

It is almost invariably followed by suppuration in contradistinction to a perityphlitis. A paratyphlitis, primarily, is recognized by pain, and a swelling behind the cæcum which has a tendency to extend in an upward direction. If the swelling be situated behind the cæcum, it is invariably immovable and displaces the cæcum, by pressure from behind in a forward direction.

A perityphlitis, on the other hand, means a circumscribed peritonitis commencing in and limited to the cæcum. It is a pathological condition usually due either to the presence of a foreign body in the cæcum or in the appendix vermiformis, which by continued irritation produces a catarrhal inflammation of the lining membrane of the cæcum, and which by extending in a peripheral direction gradually interferes with the entire diameter of the intestinal wall, and finally expends itself upon the serous membrane. In cases of perityphlitis we find, clinically, evidences of a tumor situated in the right groin of the inner side of the anterior superior spinous process, extending from that region in a downward direction to or near Poupart's ligament, keeping the normal region occupied by the cæcum. The tumor is movable from the absence of adhesions, in contradistinction to a paratyphlitis. This is so important to remember in making the differential diagnosis that Romberger in one instance recognized the location of the disease by simply applying his hand. He was asked to explain the means by which he had diagnosticated a paratyphlitis in contradistinction to a perityphlitis which had been supposed to have existed by other surgeons. He said that in a case of paratyphlitis the sensation imparted is one of firmness, due to infiltration of the para-cæcal connective tissue; in perityphlitis we meet with a well-defined tumor, which, when pressed antero-posteriorly from before backward, imparts a sensation as though it were compressed against a soft cushion. Consequently it is recognized as a fact, clinically, that a perityphlitis is usually due to the presence of a foreign body, recognized early by a well-defined tumor in the cæcum, movable in all directions from the absence of cæcal infiltration. A paratyphlitis, on the other hand, is a tumor which at first is not appreciable; it only increases in a posterior and upward direction as the process of infiltration proceeds.

A practical differential diagnosis is important, because a paratyphlitis almost without exception is followed by suppuration. Perityphlitis, on the other hand, is a circumscribed peritonitis, and is not so frequently followed by suppuration, but may terminate in resolution. From a surgical stand-point the distinction is important, because in paratyphlitis the presence of pus is recognized by palpation of the region between the crest of the ilium and the lowest rib, and by a preternatural bulging of the lumbar space. A paratyphlitic abscess calls for an incision made through the lumbar region in a similar manner as a perinephritic abscess. Perityphlitis, on the contrary, is to be treated on the general principles of peritonitis until symptoms arise to indicate the presence of pus in the inguinal region. When we have symptoms indicating the presence of pus, we should make an exploratory puncture to ascertain the nature of the effusion,—an exploratory puncture made about the appendix vermiformis, as in this particular region the formation of the abscess usually takes place. If perforation take place slowly, an escape of the contents of the appendix, or of the cæcum itself, occurs, and the presence of the irritating material in the para-cæcal region gives rise to a circumscribed peritonitis affecting not only the cæcal structure, but also adjacent organs.

It was Willard Parker that first pointed out the necessity of early operative interference in cases of perityphlitic abscess, with the view of preventing perforation by allowing the products of suppuration to escape early, limiting intraperitoneal tension, and subsequently disinfecting the abscess-cavity,—thus enabling its walls to collapse.

Remember, then, that "para," if applied to inflammation, means inflammation of the connective tissue around an organ; that "peri," on the other hand, means an inflammation of the serous membrane covering an organ. You will hear of a parametritis and a perimetritis, which will serve again to impress upon you the importance of the difference between a paratyphlitic and a perityphlitic abscess.

RESORCIN FOR ERYSIPELAS.—The local application of a two- or three-per-cent. solution of resorcin is highly recommended in facial erysipelas.

ORIGINAL COMMUNICATIONS.

REPORT ON OPHTHALMOLOGY.

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IRITIS AND IRIDO-CHOROIDITIS IN DIABETES MELLITUS.

PROFESSOR LEBER publishes the following results of some investigations as to the occurrence of inflammation of the uveal tract in diabetes mellitus. The form of iritis in diabetes mellitus is peculiar.

1. In nine cases of iritis observed in thirty-nine cases of diabetes, two were in the suppurative form. In one of these the iris became inflamed on one side with the formation of hypopion, and after an interval of eight months the iris of the other eye became involved in the same way. The iritis was not intense; the hypopion was small; the treatment of speedy avail.

2. In another set of cases the whole pupil was filled with a fibrinous membrane, which, however, rapidly disappeared under proper treatment. Twice it was combined with hypopion. This form of iritis is to be classed with the similar condition noted in connection with rheumatism: sometimes it is seen also in connection with gonorrhœal rheumatism. When the iris-inflammation was of lighter grade, the hypopion and pupillary membrane were absent, and the disease took the form of a simple adhesive iritis, with synechiæ and clouding of the aqueous humor.

3. The rapid yielding of the disease to treatment deserves a special note. Leber ascribes this to the use of salicylate of soda, which, since its introduction in the treatment of acute rheumatism of the joints, he has prescribed with great success in iritis and parenchymatous keratitis. Leber draws attention to the similarity in the affections which occur in albuminuria and glycosuria: in both, retinitis hæmorrhagica and degenerative iritis and iridocyclitis, exudative and hemorrhagic vitreous opacities, cataract, and disease of the optic nerve, occur.—*Graefe's Archives*, 1885.

KERATITIS IN DIABETES MELLITUS.

Keratitis is a rare form of eye-affection in diabetes mellitus. The following list, collected by Dr. Weisenger, of recorded cases will be of value to those interested in the literature of the subject.

1. Leudet's case (*Gazette Médicale*, 1857) of a woman, æt. 32; left-sided keratitis; paralysis of left third and fifth nerves. Autopsy showed syphilitic disease of the meninges at the base of the brain. The case is said to have had the characteristic symptoms of diabetes. This is a doubtful illustration of diabetic keratitis.

2. According to Leber, Von Graefe, in his clinical lectures, called attention to the occurrence of suppurative keratitis in diabetes.

3. Panas (1876) speaks of having observed a case.

4. Galezowski has reported three cases. (*a*) Man, æt. 58, for two years has had hemianopsia: the inner half of right retina and outer half of left being defective; the cornea is opaque, anæsthetic, and has been inflamed for eight days. The urine showed a considerable quantity of sugar. The diagnosis made was keratitis glycosurica. (*b*) A woman, æt. 64, diabetic, with progressive corneal ulcer. (*c*) Diabetic patient, æt. 64, who in the course of eight months was attacked twice with severe hypopion keratitis.

5. Bellouard has reported a case of a man, æt. 33, diabetic, who after violent headache lost consciousness; at the same time both eyes became injected and severe hypopion keratitis developed.

6. Coundouris reports a case of parenchymatous keratitis in a diabetic case, which yielded quickly to iodide of potassium. He refers to a case of Depres, in which a woman with diabetes was attacked with suppurative keratitis of both eyes.—*Graefe's Archives*, 1885.

SUPPURATIVE MENINGITIS AFTER ENUCLEATION OF THE EYEBALL.

Von Graefe, in 1863, reported the history of two cases of death after enucleation of the eyeball, in which suppurative panophthalmitis existed. Since then this clinical fact has been observed a number of times. Professor Deutschmann has prepared an article on this subject based upon an address delivered by Dr. Brückner before the Medical Society of Darmstadt. The paper contains a résumé of twenty-six cases, most of which are drawn from the literature of the subject. From these the following conclusions are drawn:

1. There can be no reasonable doubt that acute meningitis existed in the cases: ten times it was proved by autopsy. Of the

remaining ones, so far as can be judged from the clinical histories, there can be no reasonable doubt.

2. The meningitis is to be looked upon as resulting from the operation.

3. The meningitis was the result of infection with micro-organisms. The incubation-period was of about the same duration in all the cases. The disease was rapid in its inception and progress; very fatal in tendency. The autopsy showed pronounced suppurative meningitis, and, finally, in the few cases examined, micro-organisms (*spaltpilze*) were found in the sheath of the optic nerve, in the optic chiasm, and along the course of the abducens nerve.

With regard to the route by which the infection can take place, the writer thinks that it may be: 1, through the periosteum and bones into the cranial cavity; 2, through the supra-orbital fissure; 3, by way of the sheaths of the third, fourth, and sixth nerves; 4, by way of the orbital veins and sinus cavernosus (this has been demonstrated in a case of Leber's); 5, the lymph-spaces about the optic nerve stand in direct connection with the intracranial lymph-spaces, and it seems very likely that infection can take place in this way.—*Graefe's Archives*, 1885.

TUBERCLE-BACILLUS IN CONJUNCTIVAL TUBERCULOSIS.

Ulrich reports the following case. The patient on whom this observation was made was 32 years old, and had suffered for three years with a conjunctival inflammation of the right eye. At the time of the observation there was thickening of the lids; the lower half of conjunctiva tarsi inferioris, with the lower fornix and part of the adjoining conjunctivæ bulbi, were occupied by an ulcer with ragged, undermined edges; the base of the ulcer was covered with numerous exuberant granulations; several additional but similar ulcers existed in other portions of the conjunctiva. There was family history of tuberculosis, but the patient's lungs were in normal condition, and he was apparently in good general health. About the time of the above observation a child, æt. 10 months, was brought to the clinic with a conjunctival ulcer similar in appearance to the above; there was also family history of phthisis. In both of these cases portions of the conjunctiva were examined with the microscope, with the result of establishing the diagnosis of tuberculous ulcer. The conjunctiva was found to be transformed into strongly-vascularized tissue, infiltrated partly with circumscribed tubercle-nodules, partly with diffuse tuberculous masses formed by the confluence of nodules. With the aid of Ehrlich's staining process, the tubercle-bacilli were discovered.—*Centralblatt für Augenheilkunde*, December, 1885.

[Conjunctival tuberculosis is a very rare affection. There are several cases on record, but the reports of them seem so faulty that it is difficult, in most instances, to know whether they were cases of true tubercle or not. Baumgarten (*Graefe's Archives*, vol. xxiv.) has published a résumé of the cases, with a critique of them, and added the report of two cases of his own. Ulrich's cases, which were studied under the direction of Baumgarten, are, I believe, the first in which the tubercle-bacillus has been found.—H.]

EMPYEMA OF THE FRONTAL SINUS.

Dr. Borthen, of Drontheim, Norway, reports three cases of this disease, which is of interest to ophthalmologists by reason of the proximity of the frontal sinus to the orbit:

Case I.—Woman, æt. 56. The disease began with constant headache, at times extremely violent, and then accompanied with vomiting. The patient also suffered with violent fits of sneezing. A swelling gradually formed at the inner angle of the right eye, dislocating it downward, outward, and a little forward. This swelling commenced in the middle line of the frontal region, extended towards the root of the nose and back into the orbit as far as the finger could reach. It fluctuated under pressure, was covered with normal skin, and was somewhat tender to touch. Exploratory puncture showed that it was full of purulent matter. This was evacuated, after which the eyeball speedily returned to its normal position.

Case II.—In this case there was no dislocation of the eye. The tumor had developed itself with constant violent headache, which had been preceded by violent attacks of sneezing.

Case III.—In this case the prominent part of the tumor was in the orbit, and accompanied by dislocation of the eye. An incision was made into the parts covering the swelling, which was then punctured and several spoonfuls of tough, yellow matter evacuated. A drainage-tube was introduced, and antiseptic treatment adopted.

Borthen calls attention to an interesting

observation in these cases. When the cavity has been emptied and a drainage-tube introduced, and water is injected so that the tube is filled, the water in it is seen to pulsate. Leber has noticed the same thing, and has explained it by the observation of Broca of the pulsation of the marrow of bones, and the experiments of Boeckel, according to which such a pulsation occurs when a narrow opening is made into a cavity surrounded by stiff walls and containing vascular tissue.—*Graefe's Archives*, 1885.

[Empyema of the frontal sinus is a disease which belongs, of course, rather to nasal than ophthalmic surgery. An interesting point, however, for the ophthalmic surgeon to remember is the headache, which is a constant symptom in this disease. The connection between headache and eye-strain has been long recognized, and it is worth while to remember, in investigating the condition of the eyes in cases of headache, the possible existence of sinus-disease as a cause for the trouble. —H.]

HEMERALOPIA AFTER UTERINE HEMORRHAGE.

Dr. Ancke reports the following case. A woman, æt. 38, in the ninth month of pregnancy, was seized with violent hemorrhage from the genitalia. The hemorrhage recurred three times, and was preceded by a swoon; when consciousness returned, vomiting occurred. Examination showed that the fœtus was alive and there were no signs of placenta prævia. Eleven days after the first hemorrhage the patient observed that her sight became so imperfect as night drew on that she could not find her way around alone. The following evening she was completely blind. The next morning the eyes were thoroughly examined, with this result: normal vision and fundus in each eye; the visual fields, under a bright light, were of normal extent, but with diminished light strongly contracted in each eye. In taking the fields, violent supra-orbital pain occurred. Eight days later the patient presented herself again: since the last examination the night-blindness had recurred several times, and once after another hemorrhage. The night-blindness in this instance was associated with prodromal symptoms during the day, in the shape of misty vision. The patient after this disappeared from observation.—*Centralblatt für Augenheilk.*, February, 1886.

NEW INSTRUMENTS.

Ophthalmoscope with Electric Light.—Juler has devised an instrument of this kind. It has 9 + and 15 — glasses for refraction purposes. The light is set in action by a small Léchanché battery. The price is such as to bring it within the reach of any student. The makers are Pickard and Curry, 195 Great Portland Street, W., London.

Dr. Thomas Reid (Ophthalmological Society of the United Kingdom, January 28, 1886) has devised an ophthalmoscope for use with the electric light, with an attachment intended for the examination of the superficial layers of the retina.

Optometer.—Fitzgerald has devised an optometer for the rapid determination of refraction. It consists essentially of a set of spherical and cylindrical lenses which move on a curved frame. The cylinders can be rotated to any angle.—*Centralblatt für Augenheilk.*, February, 1886.

Reisinger's Double Hook for Cataract-Extraction.—Arlt has found this instrument useful in cases of extraction, when the fluid condition of the vitreous or the separation of the zonula forbids the usual method of extraction by pressure. Reisinger's double hook originally (1816) proposed for iridectomy has been adapted by Arlt for these cases, as follows. The instrument consists of two sharp iris-hooks capable of being closed, so that practically it is one hook; by moving a stop the hooks separate four millimetres. The instrument is introduced along the posterior surface of the lens with branches closed: when on the other side of the posterior pole the branches are opened, and there are then two sharp hooks, which, embedded in the lens-structure, will bring it out. The manœuvre can be performed by a single hook; but the double one is much more useful.—*Graefe's Archives*, vol. xxxi.

[Two things are to be remembered in connection with an instrument of this kind. All double instruments in which surfaces lie in contact with each other need special attention as to cleanliness. Again, the manipulation of instruments which require the starting of a spring or the opening of a stop after the point is within the eye is difficult. Of course, both of these objections are surmountable with care and practice; but, practically speaking, the simpler an instrument, and the less care it

requires, the more available is it for routine work.—H.]

TREITEL'S TEST FOR LIGHT-PERCEPTION.

This consists of a series of gray squares pasted on a black surface. There are eleven squares in the series, ranging from the brightest gray or white to the darkest or black. The intensity of the color is ascertained by means of a rotation apparatus: a mixture of a given amount of white and black in the instrument affording a given degree of gray. Treitel found that a normal eye, in good daylight, can recognize a gray which corresponds to a combination of white and black in the proportion 3 to 357. (This refers to the relation of the angles under which they are respectively seen.) This proportion is taken as the basis of the series, each succeeding square having one-half the brightness of the preceding one. The testings take place at the distance of one metre, the attention of the patient being directed to finding the darkest gray which appears as a bright spot upon the black ground.—*Klinische Monatsblätter f. Augenheilk.*, January, 1886.

COCAINE IN THE TREATMENT OF HAY-FEVER.

From a paper read before the Northern Medical Association, Philadelphia,

BY E. W. HOLMES, M.D.

UNDER the term hay-fever is included a congeries of symptoms which have for their chief and essential characteristic their periodic appearance, and it is classed under a variety of names, according to the time of appearance or fancied cause,—June cold, July cold, autumnal catarrh, peach cold, rose cold, etc.

The symptoms of the disease are, in brief, a sense of lassitude, in some reaching great prostration; susceptibility and irritation of conjunctival, nasal, and other mucous membranes adjacent and continuous, with marked injection and swelling of these tissues and also of the face; photophobia, and fearful and wonderful paroxysms of sneezing; excessive secretion from the parts affected, cough, and asthma. These are not all of equal severity in every case,—one patient being troubled with the coryza, another mainly with asthma, while a third may go through a course first of catarrhal symptoms, followed, later, by asthma.

I think you will find that, other things being equal, the younger the patient and the more recent the inception of the disease, the greater is the predominance of the catarrh; whilst in older persons and in the more confirmed cases the greater is the suffering from the bronchial and asthmatic symptoms.

In passing, avoiding all argument, I think it is admitted on all sides that there are three factors which enter into the etiology, the question in dispute being as to their relative causative influence: 1, a centric nervous modification, either functional or organic; 2, a peripheric susceptibility (in the passages affected) of the nerves or other tissues, the result of either functional or organic alteration; 3, an external irritant in various, almost multitudinous, forms.

The successful employment of cocaine in other branches of medicine has caused it to be used extensively in hay-fever. There is one thing I beg to insist upon: the need of thorough application. I cannot, therefore, recommend the tabloids I show you here; as passing these into the nostrils and allowing them to slip around at their own sweet will, while proving wonders for the virtues of the drug if of benefit, if useless shows merely the faulty method of application. I hope many of you will try this remedy during next season, and would urge that your observations will be redoubled in value with uniformity of method, of strength of solution, of care in application, with amount of drug used carefully noted.

I would suggest that a four-per-cent. solution be tried, the quantity being measured and applied to the parts with a camel-hair brush as large as will go through the inferior meatus without any force. I recommend *as large as possible*, contrary to some others, as a larger quantity is carried at a time, thereby securing more quickly the desideratum, which is local saturation.

Beginning, then, at the vestibule, paint over three times, waiting between each for the preceding to take effect; then passing along the inferior meatus (where possible), making an equal number of applications; telling the patient to hold his head well back and snuff up as much as possible from the brush into the upper meatus; then anæsthetize the uvula, pharynx, and dorsum of the tongue, and apply the solution to the posterior nares with a curved brush. Now,

waiting say five or six minutes, to allow of the full impression, I make a very simple but very practical test. Pass the brush over the surfaces of these passages, and if the sensation is not completely annulled at every point you must reapply cocaine, as otherwise your labor may be in vain.

Let me cite an illustration of this, the most important point I have to urge upon you to-night.

A gentleman one evening came into my office suffering from his annual visitor. He stated that he had had no rest for two nights; as he expressed it, "had not time between the sneezes to get asleep." I had almost exhausted my supply of cocaine on myself (for I too am a hay-feverite). I, however, used all I had (about f℥j); but, on making the test, I found one spot, high up in the vestibule, which he said gave sensation of inclination to sneeze, the rest of the surfaces being anæsthetic.

The next day, when I called to see him at his office, I found him in a dark room, unfitted for business. He reported but little amelioration, and said he could "feel himself all night sneezing from that point." That evening I made a thorough application, teaching the patient to do it himself, with the best possible results, so that he could attend to business, travel with comfort eighteen miles night and morning, and, finally, actually enjoyed a trip of two hundred miles by rail.

Cocaine does not cure the disease, but simply averts one of the most troublesome symptoms,—*i.e.*, the sneezing.

For the appreciation of this much benefit, you must see or experience an attack. This is no ordinary sneezing. I have frequently, on the street, been compelled to seize some friendly support, blinded and staggered by the violent sternutations. When entering a room, instead of addressing the occupants, I have had to bury my face in my handkerchief and sneeze it out; then, recovering myself as best I might, with a face like the rising sun, with streaming eyes and nose, have braced myself to my work.

All this is ameliorated; so that, instead of being convulsed with successions of ten or twelve every few minutes, I can enumerate them as only of "one," "two," "three" daily. The other symptoms remain, modified, indeed, but for the most part only so far as they had been aggravated by the excessive sneezing. There is still the reddened conjunctiva (though the disagreeable itching can be alleviated by a weak solution of cocaine). There is still too much secretion from the nose and some running from the eyes, still the old-time enervation; and the disease runs its usual course, the cough and asthma recurring as before.

If you could appreciate the severity of the undiminished paroxysm, I feel sure that you would be highly gratified at obtaining this measure of relief.

I feel as if cocaine had more than a mere temporary effect, as the first applications require to be made more frequently and in larger quantity. At first I used f℥ij three times daily; but after two or three days ℥iss thoroughly used in the morning would carry me through the day; though if at any time I felt any irritation on my return home, I would apply the brush dipped in the solution for a moment or two to that point. I doubt not in many cases f℥ss to f℥j daily would suffice.

Cocaine is therefore of use in hay-fever, from its not in itself producing serious symptoms, from its ease of self-application, from the test of its proper and thorough use being so simple, and from the relief gained being so positive.

By contracting the capillaries and cavernous sinuses, it *relieves* in a marked degree the congestion and swelling of the parts, and diminishes the annoying secretions; whilst, by rendering the membranes less sensitive, it arrests one of the most dreaded and most characteristic concomitants of the disease.

1523 Green Street, Philadelphia.

SOME CLINICAL NOTES ON DIETETICS.

BY WILLIAM A. EDWARDS, M.D.,

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IT is my purpose, in these fragmentary notes, to consider diet under three headings,—that appropriate to infancy, to youth, and to childhood,—and, in conclusion, to consider briefly the dietary of sickness, or disease.

The influence of diet upon health is varied by the phases of internal growth and external environment, beginning at birth, when it is considered all-important, and continuing until life's cycle is completed.

With regard to the diet in infancy, it is true that no other food has been found, nor perhaps will ever be invented, which will be as appropriate to the young infant as its mother's milk.

All mothers should nurse their babes for at least six months, unless for good and sufficient reason the consulting physician should deem it inadvisable, but he should weigh the balance well before venturing an opinion. Should it be found that the mother is totally unable to nurse her babe, a wet-nurse will be the next expedient. More particularly will this be necessary if the little patient is in delicate health or has before it the shoals and quicksands of one of our almost tropical summers, which the babe will be obliged to weather should it remain in town. In the selection of a wet-nurse the greatest vigilance should be exercised, or else a perfectly pure nurse may be infected through the babe, or the babe through the nurse.

In this connection it is well to remember the "law of Colles:" "a child born of a mother who is without obvious venereal symptoms, and which, without being exposed to any infection subsequent to its birth, shows the disease when a few weeks old,—this child may infect the most healthy nurse, whether she suckle it or merely handle or dress it; and yet this child is never known to infect its own mother, even though she suckle it while it has venereal ulcers of the lips and tongue." We should never allow a babe with the slightest suspicion of syphilis to touch the breasts of any other woman healthy enough to give the nourishing milk.

We frequently find that our patients are unable to provide a wet-nurse: then the question of a substitution of another aliment for the mother's milk arises.

The *kind* and *quantity* of food required are of the greatest importance: babes need more food in proportion than adults do, and require it more frequently, as their tissues are undergoing such active molecular changes, occasioning more waste and requiring more fuel for rebuilding.

In order to ascertain the daily quantity consumed, M. Parrot weighed infants before and after each feeding with cow's milk.

The number of feedings was six in twenty-four hours. He concludes as follows: "Nine and a half ounces for the first month, nineteen ounces for the second, third, fourth, and fifth months, and twenty-five ounces for the sixth month."

This estimation is for pure cow's milk used without dilution.

Meigs and Pepper mention the case of an infant of four months, in good condition and without symptoms of indigestion, who took thirty-six ounces of breast-milk daily, and another of five to six weeks who took eighteen to twenty-three ounces daily.

As to the *kind* of food required, it is hardly necessary to spend time in restating the almost uselessness of giving much starchy food to young infants, the saliva and pancreatic juices not being very active in young life, although the saliva in some infants seems to be able to digest a certain amount of starch, as stated by Dr. John M. Keating in a paper read before the College of Physicians June 6, 1883. The age of the infant cannot be taken as an indication of this property of the saliva.

Among the many infant foods before the public, those made according to the Liebig formula are probably the best, and of these Horlick's food in many cases is the most acceptable, as in it we have prepared a non-farinaceous food in which the starch has all been converted into sugar, and thus the delicate and easily-disordered digestive organs of the babe have been relieved of the task. It is a concentrated dry extract, containing no starch, and is prepared from wheat flour, the malt so acting upon the flour as to transform it into dextrine and grape sugar. It is J. Lewis Smith's* opinion that in Horlick's food the conversion of starch into glucose and dextrine is complete.

The food is easily assimilable and most nutritious, acting not infrequently as happily as does the mother's milk. Other points in its favor are its alkalinity, its solubility, its relatively cheaper price, and its non-farinaceous character.

For a babe of three months or under, I direct that the attendant shall dissolve, in a half-pint of a mixture of equal parts of warm water and cow's milk, a dessert-spoonful of the food, and feed to the infant by the bottle.

Should the nursling not consume this quantity at one feeding, it is not to be used again, but thrown away, and, when needed, a fresh supply passed into the

* Diseases of Infancy and Childhood. Sixth edition, 1886.

feeding-bottle. For younger children, or those requiring more frequent feeding, we may dissolve a tablespoonful of the food in hot water, when cold add cold cow's milk, stir, and place the vessel containing it in a basin of cold water.

From this a sufficient quantity may be taken, warmed, and poured into the feeding-bottle for each meal. The entire mixture should not be kept warm.

Considering next the diet in youth and childhood, we find that this transitional stage from infancy to adult life requires most careful supervision. The supply need not be so continuous as in the case of the infant, but should be exhibited more frequently than for the adult. Until the child reaches at least fifteen years, he should receive not less than four meals per day: all should be moderate, but sufficient.

Somewhat later, three full meals will be amply sufficient: it is to be borne in mind that several years must yet elapse before complete growth is attained.

The great desiderata at this period of life are digestibility and concentration of food; the nutritive value of alimentary matters is in proportion to the possession of these two qualities.

Over-concentration, however, is not to be desired, as it impairs digestibility, as, for example, over-roasting, frying, salting, drying, or even over-boiling, renders food much less soluble in the gastric juices.

This over-concentration of food is usually manifested by a diminished secretion of urine, with high specific gravity. The urine of the young is normally of lower specific gravity than that of adults. This diminished secretion of the kidney is an indication, other things being equal, for less concentration, more frequent meals, with diminished quantity at each feeding, in order not to over-tax primary and secondary assimilation.

Patients at the age under consideration are peculiarly prone to be affected by toxic agents: hence the water supplied to children should be carefully examined for lead, organic matter, and sewer-contamination.

Fresh milk is particularly liable to be contaminated, either by adulteration, exposure to contagium, or the effects of disease in the cow herself. High-bred cows are not infrequently of a tubercular diathesis.

Until full development is reached, the daily use of wine or alcohol in any form is contra-indicated, except, of course, that it may be needed during illness. The habitual use of alcohol by children hastens puberty, checks growth, and rapidly makes them *habitués*.

The diet of the parturient female may now be considered.

The normal condition of pregnancy is one of plethora, and great care must be taken that this does not become excessive. Many pregnant women crave alcohol for its transient effects: this must particularly be guarded against. Alcohol is taken to overcome the nausea and depression incident to gestation: by this means the sympathetic and reflex nausea is not infrequently converted into dyspeptic vomiting. A mother must bear in mind that her blood and the circulatory fluid of the fœtus are one and the same thing. During lactation, cow's milk combined with Horlick's food makes a very suitable and appropriate drink to be added to the dietary, thereby increasing the secretion of milk.

The combination of milk and this food will be found most acceptable during the exhaustion of childbed, when the appetite is apt to be capricious and sluggish, and the digestion impaired, contra-indicating the ordinary diet.

In *sickness* the diet must be that which will maintain the parts of the body not diseased, and that which will not increase the disease under consideration, and, lastly, the administration of peculiar food for special curative purposes.

It is in the cases of impaired digestion in which the nerve-power and secretion of the gastric organs are deficient that the prepared foods play so important a *rôle*. A rational dietary is, indeed, a sheet-anchor in this class of cases.

In Bright's disease, contracted liver, and increased arterial tension, or in cases of the "triple lesion of clinicians," a milk diet combined with an appropriate quantity of the prepared food (Horlick's) is the method of treatment that offers the best prospect of ameliorating the symptoms.

It is in consumption, in its various forms, that dietetics will be almost the principal successful means of combating the disease. The child of a phthisical mother should at once be weaned, and a wet-nurse supplied, or the child placed upon the method of feeding detailed above.

The drugs that seem to exert the most influence upon the disease are those that in their nature are nearest to foods, as cod-liver oil, phosphates of lime, etc. Their administration should cease, however, as soon as they interfere with the appetite.

The improvement of the appetite is a good criterion of the suitability of a particular climate to the case under consideration. Should the appetite steadily decrease, the patient is to change to another sanitarium. In many nervous diseases, particularly the functional and hysterical, the patient seems more nearly to approach the normal condition towards evening: it is at this time that the principal meal of the day is to be taken.

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NOTES OF HOSPITAL PRACTICE.

PENNSYLVANIA HOSPITAL.

SERVICE OF MORRIS LONGSTRETH, M.D.

BRIGHT'S DISEASE, A SEQUEL OF RHEUMATISM, AND ENTERITIS SIMULATING TYPHOID FEVER.

THE first case is that of a woman, aged 25, married, a house-servant by occupation. We have been in considerable doubt about the previous history in this case, the woman being a Dane and unable to speak English very clearly. In addition to this fact, she seemed very much confused when she came into the hospital. I cannot say that she was exactly comatose, but her intellection was so clouded that she was unable to give a clear account of herself. We elicited after much trouble the following facts. Six years ago she had an attack of swelling of the limbs, for which she was in a hospital for three months, and at the same time she also had rheumatism. She did not have any cardiac sequel of this rheumatism, or, if she did, it has disappeared, for we can now find no evidence of cardiac derangement. During the following two years she had occasional twinges of rheumatism in various parts of the body, but never severe enough during this period to confine her to bed. Her present illness commenced four weeks ago, when, after exposure to cold, she had for a week chilly sensations, followed by fever, headache, sore throat, and pains all over her body. Soon afterwards her legs and body, as well as her hands, became œdematous; but we learn that the swelling did not commence until after the pain and fever had gone, so that we cannot attribute the swelling to the rheumatism. She came into the hospital on the 8th of February, and for two weeks prior to this time she had been very ill and more or less delirious and unconscious. During all this time she had had no medical treatment until three or four days before her admission, when a doctor was called in. She was principally worried about the dropsy, and it was for this reason that she summoned a doctor. He gave her some medicine, she says, to take away the dropsy. Three days later she was seized with a most violent diarrhœa, which was worse at night.

Upon admission, she was greatly exhausted; her skin was moist, temperature 98°, pulse 100, respirations 28 to 30; tongue dry, red at the tip and edges, and coated elsewhere; and she was suffering from general pains, aggravated, no doubt, by the exposure incident to removal. The diarrhœa was still profuse, the stools being of a light-yellow color, and she was troubled with vomiting. To-day the coating on her tongue is breaking away, but it is still red at the tip and edges, and is very dry. Upon admission, this condition of the tongue was more marked, and it was this, when taken in connection with the diarrhœa, the color of the stools, and the marked hebetude, that led us to entertain the suspicion that we had here a case of typhoid fever. The temperature, however, at first blush might seem to be against this idea, for it was only 98°. But it often happens that in hospital practice cases occur where the diarrhœa and the transportation to the hospital will so exhaust the patient that on admission the temperature will be low, sometimes even subnormal; afterwards it will rise and go on in the way common to typhoid fever. With this fact in view, we were in doubt about this case for two days. But another point commenced to develop clearly which aided us very much. Remember that, after the acute rheumatism had gone, there was a tendency to swelling. Well, now, when we examined the urine, we found that it contained considerable albumen,—no great bulk such as would lead us to believe that she had an attack of acute nephritis, but enough to warrant us in believing that there is a con-

gestion of the kidney,—and, in addition to this, we found hyaline casts and some that were slightly fatty. So it is probable, therefore, that the swelling following the rheumatism six years ago, of which we have heard, as well as that which occurred in this present attack, was due to a renal complication. We must incline to the view that the nephritis was the result of the rheumatism, interstitial nephritis being the most usual form of Bright's disease following rheumatism. We must suppose, therefore, that this disease has been going on ever since the first attack of rheumatism. The œdema that occurred three weeks before admission was probably due to an aggravation of the kidney-trouble, and the medicine given by the doctor was no doubt directed to it. This medicine, acting excessively, produced a catarrhal condition of the intestines and caused the diarrhœa, which was very great. This irritation produced an irritative fever and gave us the rise of temperature. The condition of the tongue favors the idea of a gastro-enteritis produced by irritative drugs. Since she has been in bed, and especially since the purging, the swelling has diminished and the urine contains less albumen, though casts are still to be found.

Now as to treatment. When first seen, she was so much exhausted that in the absence of any history we resorted to stimulation, for which purpose we used whiskey and aromatic spirits of ammonia, and her diet was limited to lime-water and milk. As the diarrhœa was the most prominent feature, attention was directed to it, and she was ordered one-sixth of a grain of carbolic acid and one-thirty-second of a grain of sulphate of morphine every two hours, and later, when the stomach was less irritable and would bear it, she was ordered eight grains of quinine daily, in divided doses. The diarrhœa was gradually checked, her strength returned, the pulse became fuller and firmer, respirations came down to 24 and were fuller and more quiet, and it became evident that she was recovering from the irritation caused by the drug, the action of which must have been very violent. During the last two days all evidences of the irritation have vanished.

Now I want to call your attention to an exceedingly good remedy in enteritis which is frequently used in this hospital. I refer to turpentine,—ten drops of the oil given every three or four hours. In these cases this drug will prove of very great service, particularly if the enteritis be that of typhoid fever. If you talk about the germ-theory of disease and bring it into your therapeutics, and make use of iodine or carbolic acid on the theory that they will destroy these germs, you are treading either on insecure or dangerous ground. In order to give enough of these drugs to destroy the germs, we should be compelled to give such large doses as would prove injurious to the system of the patient; with less we could not even hope to influence the germs. So that I cannot imagine any treatment of typhoid fever more senseless than the so-called specific treatment with iodine and carbolic acid I say you cannot even hope to do any good unless you use very large doses, and if you do, you will have the action of these very irritating drugs on the intestinal mucous membrane. Turpentine I believe to be just as efficient as a germicide as either iodine or carbolic acid, and it does not possess any of their disadvantages. Ten drops of the oil is a very moderate dose. We could give much larger doses with perfect safety, carrying it even to the point where the characteristic odor will be detected in the stools. It will destroy micro-organisms and allay the process of fermentation that is exhibited by the distention of the bowels. Therefore you will find this drug of great service not only in typhoid fever, but also in simple, non-specific enteritis. The diet, as I have said, was simple,—lime-water and milk and beef-tea, in limited quantities.

We can hardly form an accurate opinion as yet as to how far the kidney-disease has advanced, because the woman is too weak. Her whole system is too much deranged by this diarrhœa, and the kidneys have of course partaken of this derangement, so that it would not be fair to judge of their general condition from their present state, or from the present condition of the woman's general health. Of course this purging has relieved the kidneys materially of their usual congestion, so that we cannot now say how much they are altered. When she has recovered her usual health, we will look into the state of these organs and see how much or how little they may be affected.

This is a somewhat curious and instructive case, for kidney-disease is not, as

a rule, a sequel of rheumatism, as it seems clearly to have been in this case. Commonly, the rheumatic poison seems more especially to attack the serous membranes, and we have endocardial trouble; but there is here not the slightest evidence of heart-disease. You should remember this case, as the complication is so rare.

DIFFUSE DERMATITIS.

I desire now to show you a very interesting case of skin-disease. I am not able to tell you much about the history or the cause, as the woman is very reticent on the subject. She is 35 years old, and offers evidences of having lived a very intemperate life, though she stoutly denies that such is the case. For six months past she has had this affection of the legs. While, as I say, she denies intemperance, she admits that since June last she has habitually taken three milk-punches daily and an occasional glass of beer, which she says her doctor ordered her for the benefit of her health. Six months ago this eruption commenced as small red papules confined to the legs and not appearing above the knees. These papules rapidly coalesced: it was a sort of eczematous eruption that ran on rapidly to pustulation and the formation of crusts. You notice that her face is flushed, and she has large, prominent veins in the nose and cheeks, so common in those who have led intemperate lives. Her general condition is that of disordered digestion: she has a coated tongue, her bowels are very constipated, and I would say that the amount of stimulation to which she has been accustomed has been very excessive. Her hands tremble, you notice, when she extends them. There was some interference with speech, and, indeed, when she came into the hospital she was on the verge of delirium tremens. Her heart and lungs are normal, but her liver is greatly enlarged. The urine has a specific gravity of 1014; there is a slight amount of albumen, but no sugar and no casts; it is yellow in color and acid in reaction. Now the legs, you see, are swollen, uniformly dark in color, and covered with crusts; there is much inflammation, heat, and pain about them, though much less now than when she first came in.

It is of the utmost importance in such a case that we should arrive at a correct diagnosis. Here the habits have upset the system, and all the avenues of outlet for the elimination of effete matter that is not properly digested are blocked up. The skin is interfered with in its function of aiding elimination, and as a result the effete matter in it causes inflammation. Even the kidneys are overworked in the effort to remove this effete matter, and as a consequence they are congested, as is evidenced by the albumen. No emunctory is working right.

From these facts we gain the indications for treatment, which should, first of all, be a laxative. Locally we will apply poultices to remove these crusts, and then use oxide-of-zinc ointment. This woman is taking Fowler's solution, five drops thrice daily, and the bromides for the nervousness, which is marked. The improvement has been very decided.

Now let us inquire why this eruption, due to a general cause, has manifested itself only on the legs. The explanation of this fact we find in gravity, the legs being the most dependent portion of the body. It will often come on the part most in use, following the general law of function, just as we note in rheumatism. In washerwomen rheumatism generally attacks the wrists, in letter-carriers the knees, etc. We can call this eczema if we wish, but it is really a dermatitis. Such a patient should be put to bed, that the tension of the part may be relieved. Remember that while arsenic will act like magic in such cases, it will prove absolutely useless if you do not enjoin rest and look after the emunctories. You will often see such persons take arsenic without any benefit; and it is because these collateral conditions are not attended to.

CARDIAC HYPERTROPHY ASSOCIATED WITH BRIGHT'S DISEASE.

Here we have another case where there is some derangement of the urinary function. This woman, who is 31 years old, is troubled with swelling of the limbs. She has a family history of phthisis, though she herself has no trouble of that kind. She came into the hospital two days ago, and, though she was not truly comatose, she was yet so stupid and dull that she could not give us a clear history. As well as we could learn, one month ago her legs, wrists, and face began to swell; later, she was greatly troubled with dyspnœa, headache, and sick stomach. On admission,

her legs were much swollen to a point above the knees, there was evidently fluid in the abdomen, and she had great dyspnœa, being unable to lie down. The lungs were not specially involved in any acute trouble. I now note a wrinkling of the skin of the legs, which tells me that the œdema is not so great as it was. There is not very much albumen, the urine is yellow in color, acid in reaction, and has a specific gravity of 1021; there is no sugar and no casts. Upon examining the chest, I detect a distinct thrill, very much diffused, and it is difficult to say where is its point of greatest intensity. Cardiac dulness is increased in area. I also hear a harsh murmur, with its greatest intensity towards the base, and diastolic in time. It is heard over so large a space that it leaves us in doubt as to which valve is involved, for, in addition to its extent, it can be heard posteriorly. However, I incline to think that we have mitral obstruction; therefore we have in this case cardiac disease associated with disease of kidney.

The treatment has consisted in rest in bed, with ten minims of the tincture of digitalis four times daily. She has also received, as often as required, a pill composed of elaterium, gr. $\frac{1}{3}$, extract. hyoscyami, gr. $\frac{1}{20}$, and ol. gaultheriæ, gtt. j. Now, on account of the kidney-complication, she will be given Basham's mixture (mist. ferri acetatis et ammonii), a tablespoonful thrice daily.

TRANSLATIONS.

Convulsive Spasms.—Georges Guinon, in a paper published in the *Archives de Neurologie*, states that M. Gilles de la Tourette described last year a disease which he named a "nervous affection, characterized by motor inco-ordination, accompanied by echolalia" (repetition of words) and "coprolalia" (filthy language). He says it is similar to the affection described by Beard among the "Maine jumpers," by O'Brien as "latah," and by Hammond as "myriachit." Guinon gives full histories of several cases, in all of which there were motor convulsive spasms, accompanied by varying degrees of coprolalia, echolalia, echokinesia, etc. The family history of all shows traces of nervous disorder, and most of them had insanity in some branch of the family. The tendon reflexes were feeble, but in most they could be made of normal intensity by the method of M. Jendrassik,—*i.e.*, by making the patient perform a somewhat violent muscular act while percussing the tendon just above the patella, etc. One case used to utter "hem, hem," involuntarily. Respiratory tracings by the pneumograph are given in one case. Sharp ascents are shown where he began to get excited and uttered "hem, hem," very loudly. Actions and gestures were also imitated by some patients involuntarily. Some had what is termed "arithomania,"—*i.e.*, the mania of counting before or while doing certain actions. One patient, a ballet-dancer, had violent muscular spasms in all the limbs, especially in the legs, accompanied by involuntary cries. A female hysteric, a typical subject of hypnotism, gave lucid answers to questions when mesmerized; but when her hands were then put on top of her head she invariably repeated the question, giving no answer at all. In the ordinary somnambulic state it was necessary to repeat a gesture a number of times before she could be got to reproduce it, but with her hand on her head she would reproduce it exactly and at once. This condition is termed "echomatia" (ἠχώ μάτος) by M. Marie. One man, reported by Dr. Féré, used to cry "Maria" involuntarily very often, though otherwise perfectly rational, in good social position, and the head of a large business firm. The tie that unites the three phenomena—spasms, involuntary words, and fixed ideas—is simple. They are all of the same family, have the same origin: it is only a matter of degree.

1. Simple convulsive or impulsive motor representation, producing grimaces of the face or spasms of the limbs.

2. More complex convulsive motor representation, producing the emission of a sound, or the pronunciation of a word or phrase.

3. Ordinary convulsive or impulsive ideas, sometimes causing the execution of acts more or less complicated, such as counting, arranging objects in a row on a table, sometimes limiting itself to a subjective idea without external manifestation, such as the sentiment of constant morbid fear.

In conclusion, the name of "Convulsive Spasms" may be given to a disease which, when it attains its greatest degree, is accompanied by phenomena known as

echolalia, echokinesia, and coprolalia, as well as by a peculiar mental condition which is chiefly manifested by fixed ideas. In its mildest form it is only characterized by spasms properly so called,—*i.e.*, grimaces, or involuntary motions of the limbs.

ETHOXYCAFFEINE.—Dr. Dujardin-Beaumetz, at the suggestion of Prof. Filehne, of Erlangen, has made some investigations into the physiological and therapeutical properties of the derivatives of caffeine, and in particular of ethoxycaffeine. Ethoxycaffeine is in the form of white needle-shaped crystals, fusible at 140°, slightly soluble in alcohol and ether, and insoluble in water. It is strongly basic, and forms salts precipitable by the alkalies. It was first made by Fischer, by treating caffeine with bromine and replacing one atom of H by one of Br., thus constituting bromocaffeine, which by alcoholate of potassium is then converted into potassium bromide and ethoxycaffeine. This may be made soluble in distilled water by the addition of salicylate of sodium. It is given in doses amounting daily to twenty-five centigrammes to one gramme, and, as it sometimes causes pain in the stomach, it may be combined with cocaine, as in the following formula:

℞ Ethoxycaffeine, 0.25;
Sodii salicylat., .25;
Cocainæ hydrochlorat., .10;
Aquæ aurantii florum, 60.;
Sirup, 20.—M.

In facial neuralgia it has given decided relief, and even caused sleep, in doses of fifty centigrammes to one gramme in the day. It is in migraine, however, that the happiest results were noticed; in one case a single dose of fifty centigrammes (gr. viij) produced sleep lasting for two hours, and when the patient awoke the migraine had gone. Similar effects were observed in other cases of migraine. Overdoses produced faintness and vertigo, or cramps in the stomach, and nausea. The following conclusions are submitted:

1. The introduction of the group ethoxyl or oxyethyl (OC_2H_5) in the atomic constitution of caffeine modifies its physiological and therapeutical properties, giving it a marked sedative action upon the cerebro-spinal system, and endowing it with incontestable narcotic powers.

2. In the dose of twenty-five centigrammes the therapeutic effects of ethoxycaffeine are especially appreciable in the treatment of migraine, and it has the advantage of substituting caffeine in the treatment of this disease.—*Bulletin Générale de Thérapeutique*, March 30, 1886.

CUBEB-INHALATIONS IN DIPHTHERIA.—Dr. R. Couetoux, in the *Bulletin Générale de Thérapeutique*, reports two cases, aged six and nine years respectively, of diphtheritic croup treated under very unfavorable circumstances, in a cottage with a dung-heap under the window, and containing only one fifteen-feet square room, in which the family lived. When death was apparently imminent, and tracheotomy had been refused as a last resort, he ordered inhalations of steam, tinctured with cubebs, of which twenty-five grammes were placed in the boiler at once, the steam being conveyed by tubes to the beds of the children to be inhaled by them. Both made a good recovery. Dr. Couetoux considers that cubebs is capable of being very easily employed in the form of vapors, and that used in this way against the diphtheria it is more powerful than eucalyptus, glycerin, tar, or the essence of terebenthine. However, he does not urge it to the exclusion of other remedies. In cases where it seems to be too irritating, the addition of glycerin might be advisable. The use of tonics, and rectal feeding when the stomach was rebellious, were also parts of the treatment.

NITROUS PROTOXIDE A DANGEROUS ANÆSTHETIC.—M. Gréhaut stated before the Société de Biologie that nitrous protoxide does not act as an anæsthetic, but as an asphyxiating agent. Dentists happily describe its effect by saying that their patients "virent," which means that they turn blue. M. Gréhaut believes that deaths from laughing-gas are few because it is used for short operations, but he affirms that it is an essentially dangerous anæsthetic, and that its indiscriminate use ought to be forbidden. M. Lafont has ascertained that accidents have occurred after it has been administered.

FOR GONORRHŒA.—
℞ Resorcin, 2 to 3 gr.;
Aquæ, 100 gr.—M.
Use as an injection.

Dr. Schwimmer, of Buda-Pest, in *Wiener Med. Presse*, and *Bulletin Générale de Thérapeutique*, March 30.

PHILADELPHIA
MEDICAL TIMES.

PHILADELPHIA, MAY 1, 1886.

EDITORIAL.

THE MEETING AT ST. LOUIS.

WE do not share the fears, which many have expressed, that the proceedings of the meeting of the American Medical Association at St. Louis will be marred by disorder; nor do we believe, indeed, that a strong factional spirit will be manifested by the friends of either the original Committee on Arrangements for the International Medical Congress or the enlarged Committee appointed last year. We are free from this apprehension, because it is evident that the fortunes of the International Medical Congress are not within the keeping of the American Medical Association, since by its action last year it clothed the enlarged Committee with full power to make all the needed arrangements. This has been done: an Executive Committee has been at work for several months, and has made decided progress in the preparations for the Congress of 1887. At the same time, admitting that the Association has no supervision or control over an independent Executive Committee of another organization, we maintain that the Association may nevertheless voice the wishes of the profession in this matter, and in a proper way still make suggestions to the Committee with a strong probability of their adoption.

We believe that at this meeting wisdom will guide the counsels of the Association, and that its proceedings will be marked by decorum and dignity. This meeting of the American Medical Association is of more than ordinary importance, because its decisions of questions which may come before it, if hasty or ill considered, will seriously impair its future usefulness, if they do not ultimately destroy it by precipitating strife and dissension.

The Executive Committee might be requested, on behalf of the profession, to call a meeting next fall, in Washington, of representatives from the several national societies, and to confer with them as to the *personnel* of the Sections. Who so able to nominate the most acceptable and representative laryngologists in the country as the American Laryngological Association? Similar questions might be asked with regard to the other Sections and the representative Societies of the several departments of medicine. The American Surgical Association should practically have charge of the formation of the Surgical Section, the Gynæcological Society of the Section on Gynæcology and Obstetrics, the Dermatological Association of the Section on Diseases of the Skin, and the Neurological Association of the Section on Nervous Diseases, etc. If this were done, and Da Costa nominated for President, we believe that the Medical Congress of 1887 might be made, if not as successful as the last, still a satisfactory, highly creditable, and truly "International" Congress.

MEDICAL LEGISLATION AND MEDICAL PRACTICE.

SINCE the right to practise medicine is not a natural one, but a conferred or statutory right, it follows—and it is generally conceded—that governments have the authority to regulate the practice of medicine within their own geographical limits. It is to the exercise of this power that civilized countries owe their laws relating to medical practice, which have been framed primarily with a view to the protection of the public from officious ignorance and cupidity.

It was in 1511 that the first statute was adopted in England for regulating the medical profession. The preamble to this

act (3 Henry VIII. cap. ii.) stated that physic and surgery were then practised by "ignorant persons who could tell no letters on a book, and by common artificers, smiths, weavers, and women, who took upon themselves great cures, partly using sorcery and witchcraft, partly applying very noxious medicines to the disease." This statute enacted, under penalty, that no one should practise medicine without passing a board of examiners and receiving its approval. Since then many acts have been passed, all assuming that the authority to regulate the practice of medicine belongs to the government, and that it may be exercised for the purpose of preventing the community from being the prey of incompetent and designing men.

The Registration Act of 1881 has done a great deal of good in this State by requiring all practising physicians to show their legal authorization, and by making this a subject of permanent record. The recent decision of the Supreme Court, however, which requires holders of foreign diplomas to have them endorsed by the faculty of a medical college in this State only after the said faculty has examined and become satisfied as to the qualifications of the applicant, may prove of still greater ultimate benefit to the profession. Incompetent men, perhaps, will never be altogether excluded; but the recent examinations which have been held in Philadelphia of persons holding diplomas from schools outside of the State have revealed in some cases such a surprising amount of ignorance as fully to demonstrate the wisdom of the law and to furnish its justification.

We understand that the Western Pennsylvania Medical College will open in the fall at Pittsburg with a good faculty, and having a curriculum based on advanced ideas upon the subject of qualifications for the medical degree. As there are so few medical schools in this State, it would be very desirable for the three in this city to join with the Pittsburg faculty in the effort to establish a uniform grade of qualifications for medical practice. If this is not done soon, the Legislature will probably pass a law establishing a State Board of Medical Examiners and Licensers, a similar bill to that which was unsuccessfully urged before the last Legislature by the State Medical Society, and which will probably be introduced again next fall.

ACETONÆMIC DIABETES.

IN communications published three years ago in the *Progrès Médical*, Drs. Cornillon and Mallat announced the following conclusions. (1) In the immense majority of cases of diabetic coma, acetonæmia cannot be invoked as the direct, absolute cause of this accident; (2) the reddish-brown coloration caused by the addition to the urine of the perchloride of iron, and the light rose-color by sulphuric acid, are observed not only in the urine of individuals dying with diabetic coma, but also among emaciated, worn-out subjects who have been for a long time glycosuric; (3) these reactions are not pathognomonic of the presence of acetone, and are not in direct relation with the quantity of sugar in the urine; and (4) generally these reactions are not met with in fat diabetics, even when the disease has existed for a long time.

In a paper which appeared elsewhere, the same investigators showed, among the great number of cases of diabetic coma, that in emaciated and feeble glycosuric patients it is not to the presence of acetone that the disorders of cerebration or of nutrition are to be attributed, but to the existence of an alkaline sulpho-cyanide in the system, which they believed to be the potassium sulpho-cyanide.

In a paper just published,* they reaffirm these views, and add that there is only one kind of diabetic acetonæmia, but that

* Le Progrès Médical, April 10.

there are two ways of terminating the morbid process, one rapid and one slow.

In the slow form the patient complains that he is unfitted for all work, physical or intellectual, memory fails, ideas are confused, personal appearance and appetite remain good, but there is feebleness, constant drowsiness, and sense of weariness. In this form four symptoms attract attention: the rapid and marked wasting, extreme feebleness, urinary disorder (polyuria, glycosuria, presence of sulphocyanide, increase of urea, etc.), and a special odor resembling that of ether, chloroform, or apples.

If death ensue rapidly, diabetic coma sets in like an attack of delirium tremens, lasting on the average from one to five days. This is accompanied by excess of sulpho-cyanide of potassium in the urine (as shown by the reddish-brown coloration following the addition of tincture of the chloride of iron) and the accumulation of this salt in the economy. It is essential for the production of this state that the patient shall have been subjected to a recent physical strain beyond his strength; it is not necessary that extreme fatigue should be caused, but only a relative amount: a journey by railroad, accompanied by privation, may and often will produce this result. However, this is a rare termination of acetonæmic diabetes. Where the disease is prolonged, death is commonly due to pulmonary tuberculosis. That the phthisis is secondary is demonstrated by the fact that the emaciation and asthenia are observed antecedently to the appearance of the tuberculosis.

A STATE SANITARY CONVENTION.

THE State Board of Health of Pennvania, in order to stimulate popular interest in State medicine, and for the purpose of publicly discussing the sanitary condition of the commonwealth, has decided to hold a Sanitary Convention, to which prominent sanitarians and officers of boards of health from different parts of the country have been invited. The Provost of the University of Pennsylvania, Dr. William Pepper, will preside, and the address of welcome will be delivered by His Excellency the Governor of Pennsylvania. A large number of communications have been promised upon topics directly affecting the public health, the prevention of sickness, and improvement of the conditions of living. The sessions will be held at McCaull's Opera-House, on the 12th, 13th, and 14th instant. Morning, afternoon, and evening sessions will be held, and the public has been cordially invited to participate in the proceedings.

A number of distinguished visitors will be present, and a full programme will be issued within a few days. A dinner will be given at the St. George Hotel on Thursday evening, May 13.

NOTES FROM SPECIAL CORRESPONDENTS.

BOSTON.

A CONSIDERABLE share of recent events of professional interest in this city has been connected with legislative action. First in order of importance has been the establishment, or rather the re-establishment, of a State Board of Health. Some few years ago, as is already known to many of your readers, the functions of this Board were combined, for alleged reasons of economy, with others, under the somewhat heterogeneous title of Health, Lunacy, and Charity. Governor Robinson in his last message having recommended the separation of the Health Department from the others, and a committee appointed by the Massachusetts Medical Society having urged the matter upon representatives and others, the bill has passed and become law. An effort by certain homœopaths to seize this occasion for obtaining "recognition" for their dogmas was made, but without success. The new Board, whose make-up is not yet announced, is to consist of seven members, and the secretary is to be the only salaried officer.

A measure has also passed, perhaps to the surprise of some who voted for it, making it an offence for any one to give or to sell tobacco under any form to children under

the age of sixteen years, excepting only the parents of such children. The difficulties in the way of the enforcement of such a law, it is evident, will be considerable. The use of tobacco, particularly in the form of cigarettes, among young lads is a great and growing evil in our large cities, and probably no class in the community is more sensible of its magnitude than the doctors. Yet probably moral suasion, accompanied in some cases by well-applied corporeal persuasion on the part of the parents, would accomplish more in the right direction than legal prohibition. Unfortunately, there are a great many parents who care too little about the matter to trouble themselves whether their boys smoke or (what is an equally pernicious habit accompanying cigarette-smoking in some of our public schools) carry pistols in their pockets.

The paper-manufacturers have felt themselves much aggrieved at the action of the Boston Board of Health requiring the disinfection of rags brought into this port, even when accompanied by consular certificates of the freedom from infectious diseases of the port of export, or of adequate disinfection having been performed before the rags were shipped. Several hearings have been held by the Committee on Health of the city government, at which testimony has been offered by medical men and others that no case of cholera or smallpox is known to have been transmitted through foreign rags, and that the process gone through here (which, by the way, is done in the bale by a disinfecting company, holding a special contract and charging the importer five dollars per ton for all rags thus treated) is inadequate, in that it does not raise the temperature in certain parts of the bale, as shown by self-registering thermometers placed by the petitioners in some bales packed abroad for the purpose of the experiment, higher than 120° F. This temperature would of course, so far from destroying any germs that might exist in the rags, enliven them and increase their virulence. The Board of Health has also, unfortunately for its position, been led, through the blunder of one of its own inspectors, into ordering to be disinfected as filthy rags merchandise which was invoiced as clean, new rags, and which on further examination proved to be really so. The commercial interests involved in this question of practical sanitary science, through the diversion of imports from this port to others where less strenuous restrictions are enforced, are so great that the hearings have been largely attended.

Legislative committees have also given hearings upon a petition to prohibit the use of arsenic in wall-papers and other domestic fabrics, and on a petition allowing the city of Boston to take a water-supply from the Shawsheen River at a point some thirty miles north of the city, and to abandon the Mystic supply, which, as I have remarked in previous letters, is becoming unsuitable for domestic uses from its contamination by the numerous and growing mechanical industries of its densely-populated watershed. The Shawsheen, on the other hand, is claimed to have a small population, and no manufactories likely to pollute the water.

The report of the local Board of Health for the year 1885, recently issued, shows a death-rate for Boston of 24 per 1000, which must be admitted, if the estimate of population is correct, to be a high proportion. Yet the absolute number of deaths is less than the two years previous, and the number of "preventable" deaths is only 19.5 per cent. of the total mortality, whereas ten years ago it was 7.33 per cent., and three years ago 25 per cent. This progressively lowering ratio has now reached a point comparing favorably with every other large city, except, I believe, Philadelphia, where it is about the same. Consumption, of course, heads the list of fatal diseases, and, with bronchitis and pneumonia, accounts for one-fourth of the deaths. Other deaths (of a total of 9618) were—from variola, 2; measles, 84; scarlatina, 156; diphtheria, 334; croup, 125; pertussis, 26; typhoid fever, 152; erysipelas, 40; puerperal fever, 20; carbuncle, 7; dysentery, 62; diarrhœa, 170; cholera morbus, 30; cholera infantum, 461; cerebro-spinal fever, 19; pyæmia, 11; septicæmia, 31.

The work of the Board has included the repairing of house-drains, 4238; cleaning and repairing vaults, 3958; traps supplied, 1297; and a vast deal of other cleaning of yards, water-closets, cellars, passage-ways, garbage-receptacles, removal of swine, fowls, cows, manure, etc.

The number of public baths taken showed a large increase—namely, 13,584—over the previous year, amounting to 762,730 by men and boys, and 197,035 by women and girls. The number of places disinfected for all causes was 76,615. The work of the Board also included the inspection of the abattoir, the 11 public urinals, 19 registered infant boarding-houses, and 9 lying-in houses.

Such work as this will tell in any of our cities, should cholera make us a visit.

C. F. W.

BOSTON, April 9, 1886.

OLEOMARGARINE.—The Connecticut Legislature is considering a bill which requires hotels, boarding-houses, and restaurants, if they use oleomargarine, to post notices stating this fact where all the guests can see them. Every baker who uses the imitation must hang out a sign, and even the wagon he employs to deliver bread to his customers must bear the sign "oleomargarine used here." For fear that the purchaser may not see the sign, the dealer is obliged to tell the customer that he deals in the sham instead of the real article. A law of this kind, if enforced, would prove quite troublesome to the man who wanted to sell oleomargarine but hardly dared to.

PROCEEDINGS OF SOCIETIES.

COLLEGE OF PHYSICIANS OF PHILADELPHIA.

A STATED meeting was held January 6, 1886, the President, Dr. J. M. DA COSTA, in the chair.

THE DISPOSAL OF SEWAGE, AND THE PROTECTION OF STREAMS USED AS SOURCES OF WATER-SUPPLY. BY COL. GEO. E. WARING.

(Continued from page 547.)

I have recently had an opportunity of carrying out a rather complete system of sewage-disposal in your near vicinity, in connection with the State Asylum for the Insane at Norristown. As I have endeavored there to work according to the best indications of modern experience, and as my efforts have been freely sustained by the Trustees of the Asylum, I know of no way in which I can better set forth what seems to me the best method for disposing of sewage than by describing, somewhat in detail, the work that has there been done and the result thus far achieved.

The Asylum is situated on high land in the northeastern suburbs of the city, on the watershed of Stony Creek. The buildings include eight large pavilions, with the necessary administration buildings, kitchens, laundries, etc. The population of the institution is now not far from sixteen hundred. The consumption of water is not far from one hundred and fifty gallons per head daily, and all manner of organic waste, except the garbage which is fed to swine, must necessarily be disposed of through the system of house drains and sewers with which the institution is amply supplied.

As at first constructed, the system of drainage, delivering not only foul wastes but roof- and surface-water as well, discharged its contents through a large main sewer running in a southerly direction, entering a brook which delivers, in a short distance and with a steep incline, into Stony Creek near the hospital station of the railroad.

Although the ample facilities for the drainage of such an institution afforded by Stony Creek had been a chief inducement offered by the city of Norristown for the location there of the Asylum, the buildings had not long been occupied before complaints were made of the gross fouling of the creek due to the hospital drainage.

Following the erroneous idea which is so prevalent, that the chief source of defilement in sewage is fæcal matter, two immense settling-tanks were established in the grounds for the retention of these solids only, the effluent, enriched by the products of their putrefaction, overflowing into the sewer and running into the creek. As urine and kitchen wastes are quite as bad in their ultimate condition as is fæcal matter, and much more serious in amount, this process did not long satisfy the complainants, and an injunction was threatened to prevent the discharge of any sewage from the hospital into the stream. In consequence of this threat, the authorities engaged me to devise and carry out some other system of relief. What has been done is as follows.

The old system of drains and sewers has been left as it was, to carry off roof-water and surface-water from the courts, walks, etc., these finding their way into Stony Creek through the old channel. A separate system of sewers, six inches in diameter, has been constructed in connection with all of the foul waste-pipes of the building, so that they carry all kitchen and laundry waste, bath and toilet waste, closet discharges, and dining-room and pantry-sink waste,—everything, in short, which contains foul refuse. For lack of sufficient appropriation, some changes that it was thought desirable to make in the interior plumbing of the buildings were not made. It was attempted to substitute water-closets with traps for the untrapped closets already in use. These latter have their outlets connected with ventilation-pipes in which a strong current of air is maintained by the use of steam,—a very expensive process. They are also flushed by automatic cisterns in such a way as to consume a very large volume of water. The trapped closets, with independent flushing cisterns to be worked by the use of the seat, would have effected considerable economy, but it was found that the odor produced during their use, especially in the morning when used in rapid succession, could not be kept out of the wards without the introduction of a new system of apartment-ventilation. This experiment was therefore abandoned, as too costly in construction, and the old method of forced-downward ventilation continues, in spite of the cost of its maintenance.

The dining-room sinks were subject to the usual difficulty from the accumulation of grease. Such sinks as are to be retained were supplied with a flushing outlet, which is accomplishing a most satisfactory result. The same system was applied on a very large scale to the kitchen sink, which is so arranged that its outlet is ordinarily kept plugged. When discharged, from fifty to one hundred gallons are delivered at a time through a four-inch pipe; this sweeps all grease and other refuse rapidly forward and constitutes an effective flush for the kitchen drain, which formerly gave trouble even with a large grease-trap and with the occasional introduction of a jet of steam.

The system of sewers described is brought together to a single main outlet six inches in diameter, constructed, like the branch sewers, of vitrified earthenware pipe. This main sewer delivers into one corner of an open tank forty feet square and about six feet deep, built of brick laid in and coated with Portland

cement, and having a Portland cement concrete floor. It is probably absolutely tight. Immediately in front of the inlet (the mouth of the main sewer) there is a vertical iron screen, with one-half inch openings, for holding back paper, rags, a small part of the fæcal matter, and the miscellaneous rubbish delivered from the buildings. In the corner of the tank, diagonally opposite the inlet, there is a vertical Rogers field annular siphon, the overflow of its discharging limb, eight inches in diameter, being five feet above the floor of the tank. About a foot below the overflow-level, and through the south wall of the tank, there is a four-inch opening which is ordinarily kept plugged. At the bottom of the tank and connected with the main discharging chamber outside, there is a pipe through the wall closed by a screw-gate.

This flush-tank—the largest, I believe, that has ever been constructed—has a capacity between its floor and its overflow-point of sixty thousand gallons. It occupies about two hours in discharging, and during this time about fifteen thousand gallons more flow in from the main sewer, so that the total amount discharged at each operation averages about seventy-five thousand gallons.

The discharging siphon is so arranged that when sewage begins to overflow at the top of its discharging limb its outlet becomes sealed, its contained air is soon withdrawn, and it discharges, full bore, until the tank becomes empty, when air is taken, first at the inner end and then at the outlet end; the siphon "breaks," and nothing more can be discharged until the overflow begins again. The discharging chamber delivers into an eight-inch pipe which leads to the irrigation field.

In the course of the main drain, above the tank, there is a gate by which the flow can be diverted from the tank and sent through a by-pass directly to the eight-inch pipe. Below the tank there is another gate by which its discharge may be diverted to a truck-patch near by whenever sewage is required for irrigation there. Higher up in the truck-patch there is a sewage-carrier which is connected with the four-inch hole near the top of the tank. By a proper adjustment of these different arrangements sewage can be sent from the buildings directly to the irrigation field without going through the flush-tank, or can in like manner be diverted to the lower carrier of the truck-patch. By opening the gate at the bottom of the tank, sewage is allowed to flow out as it flows in, and can be sent in uniform moderate quantity to the irrigation field or to the truck-patch. By removing the plug near the top of the flush-tank, the upper carrier of the truck-patch can be made to receive sewage for four or five hours, but, as the entering stream is too large to be completely removed at this point, it in time reaches the overflow and starts the siphon, and the whole accumulation is discharged through this.

These truck-patch carriers, the by-pass and the various gates, are incidents of the system, and are intended only for occasional use: ordinarily, the discharge is in a strong flow through the main eight-inch pipe connecting with the irrigation field.

Around the whole interior of the tank, near its top, there is a perforated brass pipe connected with the main water-supply by a float-cock at the bottom of the tank. This sends a spray over the walls of the tank during about an hour, partly before the discharge is complete and partly during the earlier filling of the tank. Its purpose is to wash down accumulations of slime which might in hot weather become offensive. This part of the apparatus is to be removed during the winter season.

The irrigation field proper is about one thousand feet distant, and its upper side is twenty-seven and a half feet lower than the outlet of the flush-tank. This field is separated from the hospital grounds by a public road and by Stony Creek. Its lowest side is nearest to the grounds, and its higher or farther side is bounded by a mill-race a little above its highest level. The area of the field available for irrigation is about twelve acres. Lying to the north of it is a piece of waste land, two or three acres in extent, which has been arranged for use as a relief area in emergencies. Along the upper side of the irrigation field, bordering the mill-race, is a deep trench, with sloping grassed sides and with a planked water-way at the bottom, for catching and carrying away the infiltration or overflow of the mill-race. Immediately inside of this ditch is the main sewage-carrier, which extends from one end of the field to the other, and has a fall of one to six hundred from its highest point, which is midway of the field. At this highest point there is a circular well, six feet in diameter and seven feet deep, measuring from the top of its wall, which is a little higher than the surface of the ground. The eight-inch discharge-pipe delivers into the bottom of this well, which thus serves to check the velocity due to the rapid fall of the connecting sewer. At its top there are three semicircular openings, two feet wide and one foot deep. One opens into the north carrier and one into the south. The third opens into another carrier which leads directly toward the middle of the field. Ordinarily, only one of these openings is used at a time, and one is sufficient to deliver the whole flow. The north and south carriers, the banks of which are lower toward the field than toward the mill-race, overflow with much uniformity, and deliver the sewage at the top of a well-graded inclined surface, over which it runs until absorbed. In no case does the sewage run quite the whole distance across the field. Movable gates being set at one point or another, the whole tankful of sewage may be delivered at pleasure over any area of from

two to four acres, according to the inclination of the surface and its condition of saturation by rain or its dryness.

The carrier which runs toward the centre of the field delivers into a level ditch which surrounds a level tract about two acres in area. This is crossed by a series of parallel ditches three feet wide and two feet deep, separated by beds or banks eight feet wide. These beds are to be used for the cultivation of vegetables, forage, osiers, or whatever may be thought most advantageous. They receive their sewage solely by lateral absorption.

This level tract constitutes a relief bed capable of receiving several tankfuls of sewage in succession, and resembling somewhat the "intermittent filtration" beds used in England.

The whole of the field outside of the level tract is now sowed with rye and grass, and is already well covered. It is intended to use it as grass-land only, and with the relief that can at all times be afforded by the level tract, by the emergency field to the north, and by the truck-patch, it need never be overflooded, and the sewage may at any time be kept off from any part of it long enough for harvesting. Judging from the experience of similar fields in England, it will be necessary to crop it three or four times during the season.

A considerable element of the cost of the work was due to the very unfavorable character of the ground, which, like that of the whole neighborhood, is a very heavy, stony, argillaceous deposit, underlaid by a stratified limestone, sometimes at a depth of two feet or more, sometimes lower than it was necessary to excavate. A sort of swale ran through the field from end to end, the land being higher at the bank of the creek than here. It was crossed with ditches, largely occupied by a tussock swamp due to a heavy underlying stratum of clay, and its old fence-rows and ditch-rows were overgrown with willows and other trees.

The cost of the preparation of the land was not less than eight thousand dollars, including underdraining, grading, uprooting trees, etc.; that is to say, it cost this amount to put it into the condition of a reasonably well graded, cleared, and naturally well drained field. That part of the cost would be avoided where land of proper character is available.

One item of the preparation consisted in the laying of over twenty thousand feet of draining tile at a depth of from five to eight feet, more than half of which required rock cutting from a few inches to two feet in depth. It should be said that the rock is so fractured that water easily finds its way down to the level of the tiles. The underdrains are generally twenty-five feet apart.

The surplus water of the soil was substantially all removed by the digging of the ditches, so that when the tiles had been laid and covered during dry weather they discharged a very small stream. It took a long time to get the stony filling of the underdraining ditches so compacted and solidified as to prevent the direct flow of water from the surface to the tiles. Even now there are some voids which have not been detected and filled, and some water flows directly from the surface to the tiles during the application of sewage. It soon ceases, and the effluent is clear within half an hour after the tank ceases discharging. In a short time this difficulty will be corrected, and it will always be clear.

The above is a brief and rough description of the general arrangement of the work. Its operation, so far as observed, may be thus explained;

All of the water-closets in the wards are flushed out at intervals of four or five minutes with a copious discharge from automatic tanks. This flow runs directly to the new sewers, and is sufficient in amount to maintain, day and night, a constant cleansing flow. The water-closets in the administration buildings and officers' quarters are operated by hand. They are all in direct communication with the same sewers. So, also, are the urinals (automatically flushed), and the wash-sinks and baths of the whole establishment; also the sinks in the various dining-halls. Such of these as are not to be abandoned on the completion of the new refectory buildings have been provided with flush-pots, by which their wastes are held back until accumulated to the amount of six or seven gallons, and then they go forward with a rush and in mass to the sewers.

The whole series of kitchen sinks are connected with a similar apparatus, by which, as above stated, from fifty to one hundred gallons at a time are discharged into the sewers through a four-inch outlet. The laundry apparatus from time to time contributes its very copious flood to the volume of the sewage.

Probably in no case does more than fifteen minutes elapse between the emptying of any vessel in the establishment and the arrival of its discharge at the flush-tank. Within certainly less than twelve hours, and often less than eight hours, the tank, becoming full, discharges the whole accumulation into the main outlet-sewer leading to the irrigation field. The stream, running out through one or other of the carriers leading from the well, overflows its banks and spreads over the land. This complete process may take two and a half hours: so that if we add together the extreme limits of time we have less than fifteen hours between the discarding of waste matter and its application to the surface of the irrigation field.

It is safe to say that putrefaction exists nowhere at any time throughout the whole system, and there is never at any point the least suggestion of the putrid odor inseparable from common sewers and cesspools. The only element in the mass which in its fresh

condition is malodorous is the fæcal matter: as this is distributed through and drowned by not less than two thousand times its volume of water, it counts for nothing as a source of exhalation. The whole flow might be discharged on the lawn in front of the administration building without offence, save to the eye.

A few small coprolites withstand the rough usage of the current and are carried on to the ground, but they are so few and so very far between as not to be noticeable. Whatever solid matter passing through the screen is lodged on the surface of the field is destroyed by natural processes everywhere active. In no case is the amount of such matter or the effect from it worth noticing.

The real filth of the sewage—its dissolved and finely-divided suspended matters—is carried into the ground, is retained there, and is destroyed by oxidation, and, through the activity of bacteria, by nitrification. As filth, it cannot pass through the soil nor very far into it. If the products of its resolution are not consumed by plants they pass off with the underdrainage, as soluble salts devoid of all organic character and unaccompanied by the lower forms of organic life.

After a few days' use of a single tract, the sewage is turned to another tract, and again to another and another, being allowed nowhere to run long enough for the closing of the ground against infiltration by clogging, or for the gorging of its interior spaces with impurities. In short, the process of purification is complete and continuous. Experience elsewhere indicates that the soil will in time improve in its purifying power from year to year for a long time.

There are larger examples of the purification of sewage by irrigation elsewhere in the world, and examples of which the lesson is enforced by long experience. There is, so far as I know, no example in existence more carefully arranged as to its details, involving the overcoming of greater natural difficulties, or better illustrating the more modern technical methods of the art.

I may be excused for suggesting that this example, so near to your own doors, points out the way in which the sewage of the towns now draining into your own water-supply may practically, and without too great cost, withhold their filth from their drainage, making the Schuylkill once again a fit source from which to draw household water.

Another method of disposal by application to the land, which is especially applicable to isolated houses and to establishments where the discharge cannot be removed and must be concealed, is what is known as "sub-surface irrigation," a process invented by the Rev. Henry Moule for use in connection with the earth-closet, and first applied systematically by Rogers Field, Esq., an English engineer, in connection with the drainage of some cottages at Shenfield, in Essex. Its use in England has never extended very much.

In this country its first application was in connection with my own house at Newport, in 1869. After ample experience and observation of its efficiency, I began to use it in my private practice as an engineer, in disposing of the sewage of isolated houses. In 1876 I had become so confident of its success that I applied it to the sewage of the whole village of Lenox, Massachusetts. In 1879 it was applied on a still larger scale at the Woman's Prison at Sherburne, Massachusetts, and in 1881 to the hotel at Bryn Mawr. The details of this system have been very materially perfected, and its use is now common in many parts of the country, there being hundreds of examples in New England, and probably as many within a radius of ten miles about Orange, New Jersey. The Lenox work, being the oldest of the larger ones, and the one longest in use, may be taken as an illustration of the system generally.

Lenox was a scattering village with less than one thousand persons living in reach of the sewers. The fund available for sewage was small, not enough to lay an outlet-sewer to the river, over two miles distant, to say nothing about work in the town. Indeed, a discharge into the river would not long have been tolerated. At that time (1876) much less was known than now as to the efficiency of sewage irrigation. As the most promising means for overcoming the difficulty, I decided on the adoption of sub-surface irrigation, using ten thousand feet of distribution-pipes, underlying a well-graded area of about one and a half acres. The pipes were laid a little more than one foot below the surface. They were common two-inch agricultural sole tiles, laid directly on the earth. They were divided into twenty lines, with as many connections with the main pipe leading from the flush-tank. The manner of connection was never very satisfactory, and the general arrangement was never entirely successful from the point of view of an expert. However, although the field was but a few hundred feet distant from the village, there was never any serious complaint from it, and there was generally great satisfaction with it, although, as the flush-tank had no settling-basin for holding back solids, —only a strainer,—there was always more or less trouble from obstructions, and as the population increased these obstructions increased, until now the whole affair is in such condition that it seems necessary to reconstruct parts of the work in accordance with methods since universally adopted. At the same time, with all its drawbacks, it has been essentially successful and satisfactory, no nuisance having arisen from it that was perceptible at any distance from the field, and no attention having been called to it by reason of its condition. It has been quoted and visited as an instance of a great advance in the disposal of the sewage

of a village, and it only needs slight improvements to make it available for perfect work for years to come, provision being made for distribution over the surface of the field at times during the short period when the village is full of visitors.

At the Woman's Prison the system was much more correctly constructed, and has been correspondingly more successful, though it is seriously overtaxed with an effluent of about thirty thousand gallons per day; the more especially as the contributing pipes lie in a bed of muck and heavy silt, one of the least successful materials for their use.

At the Bryn Mawr Hotel the same system has always worked satisfactorily since it has been sufficiently extended to deal with the large volume of sewage; but, mechanically considered, this is not a test case, for all of the sewage is received and retained in large cesspools, the absorption drains taking care only of the putrid liquid discharged from them.

After large experience with this method of distribution, I should not hesitate to use it for a community of any size, if it were a mere question of mechanical arrangement and of purification. I should hesitate to use it except where the distribution-ground is in the immediate vicinity of houses, simply because it is much more costly and much less simple than a discharge over the surface, which, as has been amply proved before, and is amply proved now at Norristown, answers every requirement of simplicity, safety, and decency.

I cannot better close this paper than with extracts from a report made on the 25th day of July, 1885, to the Chamber of Deputies of France by M. Bourneville, a deputy, submitted in the name of the committee appointed to examine the proposed law having for its object the agricultural utilization of the sewage of Paris and the purification of the Seine.

I adhere as closely as possible to the original text, thinking that, as former statements about this work have been disputed, a close translation is more important than a freer rendering in English. M. Bourneville says,—

"The vast experiment at Gennevilliers comes in its turn to confirm the great laws of natural purification and agricultural restitution, attested by the numerous examples that we have collated.

"It was in May, 1869, that is, sixteen years ago, that the sewage first reached the land of the plain of Gennevilliers. There had already been for two years (1867 to 1869) several thousand cubic metres distributed by irrigation or treated by chemical reagents at Clichy on an experimental field, where the pumps now stand; a certain number of vegetable products had been obtained on about two-thirds of an acre. The experiment transported to the other side of the Seine, at the beginning of the plain of Gennevilliers, began in 1869 on six hectares (fifteen acres) bought by the city of Paris and retroceded by it to several well-disposed cultivators. The disasters of the war came and destroyed the first installations; they were put into condition again at the commencement of 1872, and since then the service has been regularly performed. On the 3d of June your Commission visited in detail the pumping-station of the city of Paris and the plain of Gennevilliers. We have gathered together on the ground and in the documents placed at our disposal the most circumstantial information on the results obtained."

The report then describes the character and arrangement of the pumps, connecting pipes, distribution pipes, etc., and continues:

"The volume of sewage sent into the plain of Gennevilliers, which was only 1,765,621 cubic metres in 1876, was 15,000,000 in 1880, and finally 22,493,992 cubic metres in 1884. From 1872 to 1885 there have been spread on the plain of Gennevilliers 157,000,000 cubic metres.

"The irrigated surface has undergone a corresponding development. Beginning with fifty-seven hectares in 1872, it reached one hundred and twenty-one hectares in 1874, two hundred hectares in 1875, four hundred and fifty hectares in 1880, and finally six hundred and sixteen hectares on the 1st of January, 1885. The sewage is distributed over the tracts by about twenty laborers, each of whom is charged with the supply of from twenty-five to thirty hectares and with the management of about thirty outlets. In view of the extreme division of the property and the diversity of culture, the volume of sewage delivered into the plain is distributed so uniformly as to require no reservoir and no 'regulator;' simple stand-pipes placed near the steam pumps and at different points along the pipes regulate the pressure.

"During the season of active vegetation, the cultivators are present on the fields during nearly the whole day to the number of about fifteen hundred men, women, and children; they lead the water into the ditches from the distribution-outlets with a care and a skill which would leave nothing to be desired in the best irrigations of the south of France. During the three or four months of winter, vegetation is only partial; the laborers then interfere more directly; they cause the sewage to flow in the gutters and trenches in such a way as to insure purification by oxidizing action; the solid portions remain in the gutters and form a paste which the peasants afterwards incorporate with the earth in the first ploughing of spring. This is the case especially for cereals; the vegetable products utilize the winter deposits in the form of a top-dressing of the beds.

"At Paris, as at Berlin, this formation of the deposits and the irrigation continue during the greatest cold, sewage-water having always a temperature of at least 5° or 6° (40° to 44°

Fahr.). This was realized in the severe winter of 1879 and during the three weeks of continuous frost of last winter. During great floods of the Seine the pumps are generally stopped, leaving to its flow the removal of the entire discharge of the main sewers."

Then follows a table, showing that in 1884 the volume of sewage used in irrigating, per month, varied from 1,205,358 cubic metres in February, to 2,766,782 cubic metres in July. The monthly average for the year was 1,874,491 cubic metres.

"At the time of the visit of your Committee, the volume delivered to the cultivators each day reached from 130,000 to 140,000 cubic metres for every twenty-four hours. More than one-half of the sewage of Paris was purified and utilized by the plain of Gennevilliers during the heated term and during low water of the Seine,—that is to say, at the time when the discharge of sewage into the Seine is specially objectionable.

"The results obtained in the plain, from the point of view of cultivation, are most remarkable. Your Commission traversed, during more than two hours, fields covered with products of the greatest variety and abundance: vegetables of all sorts, cereals, grass, and nurseries.

"They obtain generally 20,000 to 40,000 head of cabbage per hectare, 60,000 heads of artichokes, 10,000 kilogrammes (over 100 tons) of feeding beets, and five or six cuts, yielding from 80 to 100 tons, of green forage. The gross product obtained per hectare varies from 3000 to 10,000 francs ($600 to $2000) and even more for crops.

"It has been said, in the presence of the Commission, that the horticultural products of Gennevilliers are of bad quality. It has been written that *the vegetables produced by this soil, surcharged with infected water, are bad to the taste, and the forage offered to live stock is not nutritive, and is, besides, rejected by them.* On this point here is the opinion formulated in a special report to the Agricultural Society of France by Mr. Michelin."

Then follows a table showing that the six hundred and sixteen hectares were occupied for the growth of cabbage, artichokes, potatoes, asparagus, salads of various sorts, peas, carrots, beans, parsley, onions, beets, lucerne, grass, sundry vegetables, nursery stock, trees, and cereals. Mr. Michelin says,—

"The Society has, through its committees, always observed the results obtained in the horticultural experiments which have shed light on this question, which we in the horticultural world of Paris regard as solved from the practical point of view, with reference to the beauty of the products, their quality as to taste, the success of the production, and the certainty of sale. In affirming the quality of the vegetables to be proper for the nutrition of men as well as of animals, it should be explained that the liquid ought not to be put in contact with those parts of the plant which are above ground, but only with their roots."

The Committee asserts that "all the vegetables of Gennevilliers are advantageously sold in the *Halles*, as well as in the markets of the environs. They carry off the first prizes at the horticultural exhibitions of Paris, and even of Seine-et-Oise. About eight hundred cows are fed with the aid of the irrigated grass and plants. The average dose of sewage used by a hectare, divided over the whole surface dedicated to irrigation, is about forty thousand cubic metres a year. It is really, if we include what is not used directly, about fifty thousand cubic metres. Certain parcels, specially treated, under an arrangement with the cultivators and by way of experiment, with high doses, have been receiving for three years eighty thousand cubic metres by regular irrigation summer and winter. They are covered with a luxuriant vegetation.*

"The rental value of land which was formerly from 90 to 150 francs a hectare ($7.20 to $12 per acre)—we speak, of course, of the cultivated land—is now from 450 to 500 francs ($36 to $40 per acre) in all the irrigated area. As to the selling value, it is from 10,000 to 12,000 francs ($800 to $960 per acre). All leases now accepted by the cultivators carry the provision that the high rent is not consented to except on the condition of sewage being disposable for the leased land.

"The commune of Gennevilliers asked and obtained, by the treaty of 1881, that for a period of twelve years the sewage should remain at the disposition of its inhabitants as freely as they should desire, whatever might be the projects and works of the city of Paris for the extension of irrigation (elsewhere).

"Irrigation with sewage has, therefore, brought wealth to Gennevilliers. Notwithstanding the evidence of these results, there is among the adversaries of the present project one who maintains that this wealth is an illusion, and that in reality the irrigation has caused to Gennevilliers an irreparable wrong, because no one seeks this locality for the construction of villas. The answer is simple: we take it from Mr. Francisque Sarcey: 'The population, which was not dense,' says he, 'cultivated more or less well a rebellious soil. They had only to scratch the ground to meet the sterile sand and the arid gravel. A few country houses had pushed in here and there around Gennevilliers itself; but it was by exception, *for the emigration of the Parisian bourgeoisie in search of villas passed to one side and pushed generally farther on.* Those who had stopped there could have been seduced only by the cheapness of the land. It seemed that this country, struck with a sort of malediction, was never to lift itself from this condition, when, in 1869, the Sewer Commis-

* At this rate, one acre would purify the sewage of over five hundred persons at forty gallons per day.

sion of Paris selected it as the theatre of an experiment which was to produce a happy change in its appearance.'

"The purity of the subsoil water, which receives all of the water filtering from the irrigated land, is perfect. M. Pasteur has testified to this with his high authority before the Committee.

"All may judge of this as your Committee has done by the examination and the tasting of the water that flows out of the five lines of drains eighteen inches in diameter which surround the village of Gennevilliers and discharge into the Seine about one kilometre from each other. These drains, having a total length of about eight kilometres (five miles), have been established at a depth of four metres (twelve feet) at the normal level to which it was desired to reduce the subsoil water; in the case of floods, or of very heavy irrigation, these drains facilitate the outflow of the water and prevent the invasion of quarries and cellars.

"As M. Marie-Davy, Director of the Observatory of Montsouris, testified before the Committee, the water of the drains is chemically pure. It contains barely 0.001 gramme of organic nitrogen to the cubic metre even at those points, as in the experimental basins of the gardens belonging to the city of Paris, where the annual or continuous dose reaches and passes 80,000 cubic metres per annum. With Liebig's bouillon, which shows 62 micro-germs in a cubic centimetre of water of the Vanne, 1410 for the Seine at Bercy, and 20,000 for the sewage, there are found only a dozen inoffensive micro-germs in the water of the drains, which thus sustains the opinion of M. Pasteur. At the same time, the large content of chlorine, 0.07 of a gramme per litre, indicates the presence in the subsoil water of a large proportion of purified sewage which has passed through the ground.

"The sanitary condition of the commune of Gennevilliers leaves nothing to be desired; the Mayor and his Adjuncts, Doctors Thobois and Cornilleau, testified before the Committee at its visit to Gennevilliers, and it is enough to walk about in the plain and see the vigor and good health of the hundreds of men, women, and children who are working eagerly [avec ardeur] in the midst of the irrigated fields to understand the true state of the case. The *general mortality* in 1865 was 32 per 1000. In 1876 and 1881 it was only 25 and 22. No epidemic of typhoid fever has existed for long years, although the irrigations were continued on a large scale during the cruel epidemic which attacked Paris in 1882. Not a single case of cholera occurred in 1884. Never from 1869 to this day, although the inhabitants eat their own vegetables, even uncooked, has there been observed a single case of *anthrax* or *septicæmia*. In fact, all of the information that we have gathered from most of the physicians who have had occasion to be called to Gennevilliers proves that intermittent fever shows itself very rarely, and that the number of cases does not exceed that of localities more or less remote, and of which the fields are not subjected to irrigation.

"Still another argument pleads in favor of the excellent sanitary condition of Gennevilliers,—that is, the increasing growth of population, as shown by the following table:

1st of January,	1869,	2186	inhabitants.
" " "	1872,	2218	"
" " "	1880,	2389	"
" " "	1885,	3245	"

"Such are the facts that your Committee has established in the plain of Gennevilliers: it has been constantly accompanied by the authorized representatives of the population of the plain and its suburbs: MM. Pommier, Mayor, and Retrou, Adjunct, of Gennevilliers, Berthou, Mayor of Saint-Ouen, Hennape, Mayor of Puteaux, our friend M. Bailly, Mayor of Courbevoie, Honorary Inspector-General of Public Assistance. A deputation of the cultivators of the plain gave the Committee all the information as to details that it needed. No discordance was developed; the unanimity was complete concerning the excellence of the results obtained and the absolute innocuity of the system. The majority of your Commission cannot refrain from expressing to you the confidence that these demonstrations give it in proposing to you the continuation and extension of sewage irrigation."

The publication of this report must have been most gratifying to M. Durand-Claye, the champion and the wise and eager director of the work at Gennevilliers, who has fought its battles against prejudice, ignorance, and malice from the days of its struggling infancy to this hour of its complete triumph and his own.

At Gennevilliers, as at Croydon, Berlin, Dantzic, Breslau, and the Norristown Asylum, complete evidence is set before us of the absolute efficiency of the system of purification by application to the soil, which, it seems to me, on the score of economy and of completeness, as well as by reason of the conditions generally prevailing in this country, has such advantages over the best of the chemical systems that it is, in at least a very large majority of cases, better suited to our needs.

Nor can it be doubted that this system will enable us to restore and to maintain the purity of our water-courses, especially when these are used as the source of water for domestic use.

PROFESSOR AUSTIN FLINT'S SUCCESSOR.—The Trustees of the Bellevue Hospital Medical College have appointed Edward G. Janeway, M.D., to the chair of Professor of the Principles and Practice of Medicine, lately occupied by the late Dr. Flint.

COLLEGE OF PHYSICIANS OF PHILADELPHIA.

A STATED meeting was held March 3, 1886, the President, Dr. S. WEIR MITCHELL, in the chair.

J. H. Musser, M.D., read a paper entitled

NOTES OF A CASE OF RAYNAUD'S DISEASE AND OF GANGRENE COMPLICATING DIABETES MELLITUS.*

Thomas G. Morton, M.D., presented a

CASE OF SPINAL CURVATURE THE RESULT OF UNRECOGNIZED ASYMMETRY IN THE LOWER LIMBS.

I shall occupy the attention of the College for a few minutes in showing a case of marked spinal curvature the result of asymmetry in the lower limbs. The history is briefly as follows. The patient is from Wyoming County, Pennsylvania, aged 24. He was a puny boy until about the age of fifteen. He then grew rapidly, and gained his height, which is now five feet eleven inches, in the course of fifteen months. He has never been sick in his life, with the exception of the ordinary ailments of childhood. While growing rapidly, he noticed when lifting a stone some pain upon the right side. He has never experienced pain, except when lifting weights, —never while lying down. He has been a student of medicine for two and a half years. Sitting on hard benches has caused considerable spinal ache. A year ago the diagnosis was made of serious necrosis of the lower dorsal and lumbar vertebræ. For this, a plaster jacket was applied. During the past four or five years there has been a constantly increasing lateral curvature. On examination I found a marked spinal curvature, with lameness. Looking at him as he passed in front of me, I noticed great asymmetry in the length of the lower limbs. This had not been recognized before. I found it necessary to use a block an inch and seven-eighths in thickness to bring the right limb to its proper length as compared with the left. With this elevation the spinal curvature almost entirely disappeared; careful measurements also confirmed the shortening of this limb. It has been a little difficult to determine whether, at the time he commenced to grow more rapidly, there was any involvement of the spinal nerves which impaired nutrition of the affected side, which involved not only the upper part of the body but the lower part as well. My experience in lateral curvature is that in the absence of asymmetry of the lower limbs almost all curvatures arise from some morbid condition of the spine, as seen in infantile paralysis. There is generally more or less muscular atrophy and permanent deformity in cases of marked lateral curvature. This is seen in the diminished size of the upper and lower extremities of the affected side in most of these cases. It is barely possible that when this patient commenced to grow, at the age of fifteen, development did not take place in the right side and lower extremity; but against that theory examination shows that the thigh and calf muscles are equally developed; the only variation is the unequal lengths of the limbs. I therefore believe that this want of development is congenital. The patient has always had difficulty with the heel of the shoe upon the right side, which would wear out differently from that of the other.

He now has no spinal tenderness, except when in the deformed position. He is unable to stoop very well, but before the application of the plaster jacket, less than a year ago, all of the spinal movements were normal and he was quite a gymnast. He ascribes the present condition to the use of the jacket. The unnatural pressure perhaps led to a partial absorption of the intervertebral cartilages upon the right side, and this may have caused more or less fixation of the vertebræ.

In many cases asymmetry in the lower limbs produces a slight amount of lateral curvature with pain. A careful measurement of the limbs will detect this at once. I have seen a number of such instances.

Dr. W. W. Keen said: It seems to me that, in standing with his foot on the block, the patient's right buttock was higher than the left. This appears to be confirmed by examining the line of the anterior superior processes of the ilium. The deformity appears to be overcorrected by the block one and seven-eighths inches high, and the shortening less, therefore, than was stated. I should like to ask Dr. Morton whether there is any explanation with reference to the causation of the trouble.

Dr. De Forest Willard said: If this be simply a case of lateral curvature, how does Dr. Morton account for the marked rigidity? Rigidity is rare in lateral curvature except in the late stages. It is difficult to determine in this case whether rotation has occurred, on account of the inability of the man to stoop. The pressure of a gypsum jacket for so short a time should have produced relaxation and atrophy rather than stiffness.

Dr. Morton, in conclusion, said: I think the want of symmetry in this case is congenital. With reference to the slight overcorrection of the deformity, it may be that this block is a little high, but the only way we have of noting when the asymmetry is overcome is by the eye, and the absence of lameness in walking.

Lateral curvature of the spine frequently occurs in hip-joint disease. One reason that it does not occur in many cases is that the shortened limb is provided with a proper shoe apparatus. I did not say that absorp-

* Will appear in next issue of the TIMES.

tion of the intravertebral substance had occurred, but I think it possible. I think it probable that in the course of six months or a year the now slight unrectified curvature may disappear. In order to support the spine in every direction, I have the patient supplied with an ordinary spinal brace.

As I have said, the spine was perfectly pliable until the plaster jacket was applied and worn a number of months. This may have had some influence in stiffening the spinal column. The patient has never had symptoms indicative of Pott's disease.

PHILADELPHIA ACADEMY OF SURGERY.

A STATED meeting of the Philadelphia Academy of Surgery was held April 5, 1886, the President, Dr. D. Hayes Agnew, in the chair.

Dr. Thomas G. Morton read a paper entitled

REMARKS ON TRACHEOTOMY, WITH SPECIAL REFERENCE TO THE AFTER-TREATMENT.

In discussing the treatment following the operation of tracheotomy for croup or diphtheria, a brief reference to the manner of opening the trachea is necessary.

The incisions made into the windpipe are usually either vertical or elliptical. It is preferable, however, in all cases to remove a portion of the trachea, for although a tube can readily be inserted by the aid of the dilator when simply an incision is made, yet the removal of an elliptical portion is subsequently more satisfactory, for if from any cause the tube has to be taken out for cleansing purposes or otherwise, or if the tube cannot be tolerated, the ample size of the opening already made will be sufficient for respiration if the soft parts are kept well apart by retractors. If it is the intention of the operator not to use a tube, cutting out a portion of the trachea is of course necessary.

So soon as the operation upon the trachea is completed, air rushes through the aperture, and almost at the same instant air is expelled. At this moment detached portions of false membrane are frequently forced into the tracheal opening, causing obstruction and attendant symptoms, and necessitating the prompt use of the tracheal forceps or sponges. When no fragment or mass of false membrane appears, the tube can immediately be introduced; after which the difficulty in breathing gives place to an improved respiration, the general excitement lessens, the circulation is more normal, and the child (nearly exhausted) revives, becomes quiet, and often falls into a quiet sleep.

If there should be any difficulty in introducing the tube, either from the depth of the trachea, movements of the parts, or otherwise, the tracheal dilator will prove most serviceable; indeed, this instrument can be used to keep the opening free for the entrance of air and for cleansing the part for some time before the tube is placed in position.

The tube, as well as the canula, should at intervals be removed and thoroughly cleansed, the canula of course very frequently. I have known great difficulty in breathing slowly come on, with symptoms of asphyxia, which would have soon resulted fatally, from the tube becoming almost entirely blocked up and not suspected, while the canula was quite clear. The secretion which accumulates in such cases is very tough, and so dense that no impression can be made on it by any effort to clean it except by the aid of the instrument-maker. This condition of the tube is more frequently observed in diphtheritic cases. So that the attendant should always have an extra tube; indeed, an additional tube should always be on hand.

The after-treatment of tracheotomy occasionally may include the necessity for artificial respiration where, on the completion of the operation, life appears to be extinct. In such a case there is no time for delay; the lungs must be instantly inflated by the mouth applied directly to the tube, even at the risk of infection, or the air must be conveyed through some apparatus, should such be at hand.

I operated in such a case, with the assistance of Dr. William Hunt, on a boy 8 years of age, suffering from diphtheritic croup. All respiration had ceased, there was no pulse, and life seemed extinct. The simple incision was hurriedly made, the tube was inserted, and it was not until the lungs were inflated a number of times by the father of the child, his mouth being applied directly to the tube-opening, and artificial respiration kept up for some time, that the child revived. In this case excellent recovery ensued. The father, however, contracted a sharp attack of the disease, but recovered.

The tube is held securely but lightly in position by a piece of tape which is carried around the neck. The opening of the tube is protected by a strip or two of gauze, which should be first immersed in hot water or lime-water, and frequently changed. This is not only soothing to the parts, but it prevents the entrance of any foreign substance and gently tempers and moistens the inhaled air.

The tissues adjacent to the tracheal wound often become covered with false membrane, and the discharges from the trachea are irritating and copious. These should be immediately removed, and absorbent or antiseptic cotton applied. Later, if hemorrhage from the granulations in the wound should occur, it can readily be controlled by ergotin or phenol sodique, or other hæmostatic.

When a tube is used, there can be no fixed time in any case when it can permanently be removed. As a rule, however, when the pa-

tient takes ample nourishment, has recovered strength, and the false membrane is found only in fragments and softened, and with no disposition for its re-formation, showing that the inflammatory stage of the disease is probably past; when respiration can easily be maintained through the larynx on closing the tube or after removing it; and if the child has a voice, and if the wound is healthy,—then it will be quite safe to remove the tube permanently. Should there be subsequently any recurrence of decided obstruction, it can be re-introduced.

The tube can seldom be dispensed with under twenty-four or forty-eight hours generally, and in pseudo-membranous croup it can be worn until the fourth day, and sometimes even later with advantage; in diphtheritic disease generally it cannot be dispensed with so early.

The constitutional—by this I refer to medicinal—treatment may be required in some cases after tracheotomy where the laryngeal obstruction has come on early and been rapid in its course, demanding an early operation. In such a case the soft parts above the seat of operation from their appearance may suggest the internal administration of mercurials, salines, or other remedies; but, as a rule, when tracheotomy is performed the inflammatory stage is over or nearly so, and the exhausted patient requires simply a supporting and stimulating treatment.

In those cases which have come under my observation, no medical treatment has been required. Milk with stimulants has been freely given at short intervals, and forms the basis of the treatment. Occasionally the use of an anodyne by the rectum is required; it is seldom necessary to administer an opiate by the mouth.

In most cases the key to success in the after-treatment of tracheotomy consists in the presence at the patient's bedside of an experienced attendant; indeed, the recoveries in most instances are largely due to the incessant, watchful, intelligent, and patient attention given by those who conduct the nursing, and who rigidly attend to the minor details, and are prepared to combat any emergencies which may arise.

As I have always after tracheotomy employed the tubes, and having had no difficulty in their introduction or subsequent retention, I am consequently without any experience in treating such cases without the instrument; and in some instances, I should think, especially where the trachea lies deep or the child is very restless, the conduct of such cases would be very embarrassing.

It seems hardly necessary to remark that the temperature of the patient's room (which should be as free from all furniture as possible) should be constantly maintained at least at 75° or thereabouts. Only those should be admitted into the sick-room who administer to the patient's necessities. Quietness and avoidance of excitement should be insisted upon.

The air in the room should be gradually changed whenever required, and it should be kept fairly moist by constantly evaporating water by means of a gas-jet or spirit-lamp. The very common practice of boiling lime-water or having lime in the boiling water simply insures the lime's being spattered about the room, and is of no possible advantage.

DISCUSSION.

Dr. William Hunt: I would ask, how far does defective innervation and brain-trouble enter as a cause of death in these cases? I am led to make this reflection from something I read in the morning paper about a curious case out West, where the sentence of a man condemned to be hung was postponed on the ground that he could not be hung, as he was compelled to wear a tracheal tube for an injury to the throat. I think that he could be hung, as the constriction of the neck would cut off the circulation of the brain.

Dr. Brinton: Some years ago I operated in a case of diphtheritic throat and kept the tube in four or five days. At the end of that time I found the cartilages entirely denuded for one-fourth of their circumference. This was limited to the rings involved in the laryngeal opening. I, however, did not attribute it to the tube, but to the diphtheria. I am acquainted with a prominent lawyer who has worn a tube for over twenty years without inconvenience.

I wish also to make an anatomical inquiry. Some years ago I operated on a case of a child with a foreign body in the throat. The isthmus of the thyroid was quite large, and I embraced it between two ligatures and cut it. As soon as the incision was made, respiration ceased absolutely, apparently from the effects of the section. Breathing was re-established by artificial respiration. I have been at a loss to understand why this should occur, but it is probable that some branches of the pneumogastric were indirectly sent to the body. I have cut the thyroid in other instances without unpleasant symptoms.

Dr. John M. Barton: I have seen the tube worn for fourteen months in a case of syphilitic stenosis, and at no time was there reason to suppose that any ulceration or irritation had been caused by the tube.

With reference to those cases in which the breathing stops before the operation is completed, I succeeded in one case in which the breathing stopped perhaps a minute before I opened the trachea, by resorting to artificial respiration in the ordinary way. The child lived for about two days.

The question of after-treatment in these cases is, I think, a matter of great importance. I have never had any difficulty with the operation itself, but my patients perish two or three

days after operation, and many of them in the same way. There is increased secretion, bubbling from the tube, requiring frequent washing out; the child makes more effort at coughing, and generally perishes about that time. The statement has been made that in these cases the disease has advanced; but I must have been singularly unfortunate to have a series of cases in which this happened.

In my last case, I was tempted to employ a method of after-treatment used by a gentleman in this city who claims marked success from it. His plan is to make a sort of tent with heavy bed-clothing. The air within this covering is impregnated with moisture and steam from lime-water. He claims a large percentage of successes from this method. Under it the mucus is much thinned and more readily expelled. I should like to know whether this plan has been used by any of the members present.

The President, Dr. D. Hayes Agnew: My experience with tracheotomy has been very unfortunate. Out of ten or twelve cases in which the operation was performed for membranous croup, I can recall but two that were successful. In regard to the time necessary to retain the tube, every case must be studied by itself. In some cases a few days are sufficient. In other instances the tube must be kept in many days, sometimes for weeks. In order to determine whether or not the tube may be removed with safety, I place my finger over the opening. If respiration can be carried on freely, I remove the tube. I have never seen the trachea suffer from the retention of the metal tube for a long period. I know of cases in which the tube has been worn for many years. In my cases death has usually occurred at the end of two or three days after operation, probably from extension of the disease to the smaller air-passages.

In regard to the re-establishment of respiration where that has ceased, I think that the gum bag might be used, and thus the danger of contracting the disease would be avoided.

I do not see why this operation could not be simplified by opening the crico-thyroid space and dividing the cricoid cartilage. As large a tube as is required could be put in by dividing the cricoid cartilage, and I do not see why this should not altogether substitute tracheotomy.

It is exceedingly difficult to estimate the intrinsic success of tracheotomy. Patients on whom I should have operated if there had been no objections have recovered. I have seen a number of such instances. In the case referred to by Dr. Barton, it may be that the steaming process cures the patient without the tracheotomy.

Dr. Nancrede: I would suggest that in these cases tripsin might be a valuable agent. It has the power of dissolving large quantities of membrane, while it has no effect on the healthy mucous membrane. It may be used in solution of the strength of ten grains of tripsin with thirty grains of bicarbonate of soda to the ounce of water.

I have always looked upon the after-treatment as everything in tracheotomy. I like the gauze cravat, as rendering it unnecessary to keep the air of the room laden with moisture, which has a depressing effect on the general condition. The room may be kept at the ordinary temperature if three or four thicknesses of thin gauze veil folded loosely are kept over the tracheal opening. This renders the air moist and diminishes the risk of contagion to the attendants. I have found that a spray of lime-water across the mouth of the tube will afford relief where a spray of steam will not. My plan is to use the cravat, and every hour or two remove it and spray across the tube lime-water for fifteen or twenty minutes, and occasionally drop a little alkaline liquid into the tube.

In connection with the operation there is a suggestion which I have put in play, and to which my attention was called by Dr. Hodge. The thyroid body and veins are enclosed in two layers of the tracheal fascia, these two layers being attached to the cricoid cartilage. With the ordinary incision high up, it is possible by a small transverse incision to detach the fascia and push down the thyroid body and vessels enclosed in the fascia, and open the trachea low down. This is a very simple operation.

I would urge the great importance of taking the tube out at the end of twenty-four or forty-eight hours, if there is much difficulty in breathing, and the use of the dilator and tracheal forceps. On visiting a patient I have found it livid, but by taking out the tube I have been able with the forceps to remove large masses of membrane from the bronchi. This has been accompanied by marked improvement in the capillary circulation. In this case, however, the disease progressed, and the patient finally died; but if the membrane had not been removed it would have died in a few hours.

Dr. Thomas G. Morton: Where death follows the operation of tracheotomy in children, it is usually the result of asthenia. The tube may be perfectly clear, but the child does not take nourishment or does not digest it. Speaking of the cases that get well without operation, I was recently called at night to perform tracheotomy for croup. As the symptoms were not urgent, I concluded to wait until morning. In the morning the child was no worse. The operation was postponed from time to time, and the child recovered without tracheotomy.

The tube may be worn for a long time without causing irritation. There is a lady in this city who for over twenty years has worn a tracheal tube.

J. E. MEARS, *Recorder.*

OBSTETRICAL SOCIETY OF PHILADELPHIA.

STATED MEETING, THURSDAY, APRIL 1, 1886.

The President, B. F. BAER, M.D., in the chair.

DR. E. P. BERNARDY read a paper on

THE VALUE OF BINIODIDE OF MERCURY AS AN ANTISEPTIC IN OBSTETRICS (see page 521).

Dr. CHARLES HERMON THOMAS had heard the lecturer with interest, and learned with surprise that cases of so much gravity could be controlled by such simple means as vaginal injections. His practice and belief has been that such cases require the introduction of washes into the uterus, the washing of the vagina being utterly futile. The doctor related an instance in which a quadripara was allowed to die of septicæmia, no effort being made to wash out the uterus, although vaginal antiseptic injections were frequently employed in the case. Six weeks have elapsed since the death of that patient, and in this time the same practitioner has lost three additional parturient patients.

Dr. LONGAKER spoke in support of Dr. Bernardy's practice. We have been led to expect a prompt fall of temperature from the use of intra-uterine injections in septicæmia post partum. His own plan is to discontinue intra-uterine injections after the first thorough washing, unless offensive discharges come from the uterus. He has observed that after the repeated introduction of forceps into the uterus, the introduction of the hand, or other means favoring the introduction of air, a peculiar traumatic metritis results, and to relieve this he has been in the habit of introducing into the uterus an iodoform pencil containing about one and two-thirds drachms of iodoform: this prevents future sepsis (see Lusk, last edition). Prompt lowering of temperature and pulse are the result if this is used after sepsis has occurred, and even when antiseptic uterine injections have failed. The effect of one of these pencils will last through two or three days, when another may be needed.

Dr. HOWARD A. KELLY drew attention to the fact that the biniodide of mercury is almost if not entirely insoluble in water, and that an alcoholic solution would scarcely be admissible. He also called attention to the frequent presence of the bichloride as an impurity. He read the following letter from Dr. Francis L. Haynes:

"In reference to the potassio-mercuric iodide, I may add a little to the facts I mentioned in our conversation. The last case of puerperal septicæmia I have seen in my own practice occurred in Mrs. F., confined December 18, 1885. It was due to the fact that my hands were contaminated with septic matter, and that I trusted entirely to hard scrubbing and to inunction with oil of turpentine to purify them (after Goodell). In this case the pulse was 138, and the temperature ran up to 105°, but she recovered in a few days under copious injections of hot water into the uterus (generally plain, but sometimes with a little carbolic acid added). Three injections were given, and during the days on which this treatment was being used I attended several cases of labor, purifying myself with ten-per-cent. solutions of carbolic acid. These cases had no trouble; but I became ill, as I always do when I use much carbolic acid, and my hands became sore. I now began to use the potassio-mercuric-iodide solution to purify my hands, and since then have had no trouble whatever, although I have attended cases of labor within a few hours after (1) washing out the uterus of a patient of Dr. L.'s suffering from septicæmia (terminating fatally); (2) after amputating finger and metacarpal bone of a man suffering from gangrene of finger and suppurative cellulitis of the hand and wrist; (3) after digging out putrid placenta after miscarriage (several instances); (4) after performing autopsy in a case of suppurative peritonitis and bathing my hands freely in the pus. The solution may be used without apparent injury to purify blunt instruments, and it is certainly a great comfort to soak your speculum thoroughly in it after treating a case of gonorrhœa.

"How is the solution prepared? A four-ounce bottle is marked with a diamond so as to indicate drachms, and filled with distilled water containing ʒj each of potassium iodide and mercuric iodide. (The cost of this solution is less than ten cents.) It is now a very easy matter to make a solution of any desired strength extemporaneously: a tablespoonful to the pint—one part to one thousand—is the strength I generally employ, but after autopsies I use one to five hundred.

"How do I prevent my hands from becoming eczematous when using this solution? Once or twice daily, after washing the hands, and while they are still damp, about fʒss of glycerin is poured into the palm and thoroughly rubbed into the whole surface of the hands, which are then dried as usual. This is very effectual."

Dr. WILLIAM GOODELL has had no experience with biniodide of mercury, but has had with bichloride. He is not sure that Dr. Bernardy is at fault in confining his antiseptic injections principally to the vagina; for where does sepsis usually take place? Not in the uterus, but through wounds of the vagina. In the Charlotte Hospital they have good results from the use of bichloride injections and iodoform. When the Preston Retreat was new they had a good record, but afterwards the percentage of fatal cases became too large. This fault was remedied by the use of bichloride of mercury as a vaginal injec-

tion, and the introduction of ℈j iodoform. The pads to catch the lochial discharges were replaced by absorbent cotton medicated with corrosive sublimate. In the last one hundred and forty cases no rise of temperature has occurred during the puerperal period. In these cases the antiseptic applications were all directed to the lower portion of the womb and the vagina. Dr. Bernardy is probably right. A solution of one to two thousand is too strong, and will produce soreness after operations. He does not like to have the patient on her side during and after the removal of the after-birth, as it favors the entrance of air into the vagina, as in Sims's position. She should be on her back.

Dr. HARRIS inquired if Dr. Bernardy did not use uterine injections after the removal of the dead fœtus. The presence of a decomposing fœtus, with unbroken membranes, within the uterus has a remarkably prostrating effect upon both mind and body of the mother.

Dr. GITHENS described a case of post-partum septicæmia in which an offensive leucorrhœa, which had existed before labor and which had been neglected, was the apparent cause. In this case vaginal injections of potassio-mercuric iodide quickly relieved the undesirable symptoms.

Dr. THOMAS thought vaginal injections would be quite sufficient as a prophylactic agent, but would it be considered sufficient if septic peritonitis were present? One thorough uterine wash first, and then iodoform pencils to prepare for subsequent vaginal washes. In Bellevue Hospital uterine injections are always used when vaginal washes fail to reduce the temperature.

Dr. BERNARDY uses the first injection himself, and thoroughly washes out the uterus, and continues the injections until the fluid comes away perfectly clear. The firm contraction of the uterus eliminates the liability of absorption there, and the principal abrasions and absorbing surfaces are undoubtedly vaginal. The results at least have been satisfactory. Another point is this: the position of the patient on the back renders it impossible for all of the injected material to flow out at once, and, in consequence, the mouth of the uterus continues bathed for some time in the antiseptic fluid.

When the mercuric iodide was first used, its insolubility was the first thing to overcome. The results of the experiments are the pellets which are exhibited to-night.

The pellets exhibited are quite soluble, and are chemically pure. The biniodide has been tested for bichloride, and none is present. The potassium iodide present merely aids in the solubility without affecting the chemical composition of the mercuric iodide. He has found the preparation non-irritating, and has never had his attention called to its producing eczematous eruption on the hands of the nurses.

Dr. WILLIAM GOODELL read a paper by Dr. Hiram Corson, on the statistics of three thousand and thirty-six cases of labor.

NEW YORK PATHOLOGICAL SOCIETY.

A STATED meeting was held April 14, 1886, JOHN C. PETERS, M.D., President *pro tem.*, in the chair.

Dr. G. C. FREEBORN presented, in behalf of a candidate, a specimen of colloid carcinoma of the caput coli; Dr. W. P. NORTHRUP, one of chronic localized endocarditis; and Dr. W. M. CARPENTER, one of renal calculus weighing one hundred and forty grains.

Dr. G. C. FREEBORN, from the Committee on Microscopy, reported on the tumors removed from the abdominal wall by Dr. Sims and presented at the stated meeting of the Society held March 10. The growths had the gross appearance of little nodules of fat. On microscopical examination they were found to be surrounded by a fibrous capsule to about one-third of their extent. Two of them contained marked hemorrhages; one contained quite a large nodule of sarcomatous new growth, and extending through the fatty portion were fibrous processes containing new vessels, and the whole was surrounded by sarcomatous tissue. Nerve-fibres were found in three of the nodules, and in one they were completely infiltrated with small round and spindle-shaped cells.

The diagnosis was "fibro-sarcoma, probably springing from the nerves."

A PECULIAR CONDITION FOUND AT AN OVARIOTOMY.

Dr. H. MARION SIMS presented the specimen, which was removed from a woman 63 years of age, who had enjoyed a fair degree of health until within the last five years, when she noticed an enlargement of the abdomen, for which she consulted a surgeon, who tapped her and drew off quite a large quantity of fluid; she was also tapped twice afterwards, and before Dr. Sims saw her. At the time when Dr. Sims first saw her the patient was anæmic and was losing flesh rapidly, and he decided to give her temporary relief by tapping the abdomen again. He drew off six quarts of a thick fluid, but she did not materially improve. The abdomen began to fill again, and he determined to operate at once, notwithstanding her enfeebled condition. As soon as he made the incision into the abdomen he reached what he took to be a sac of the tumor, and, finding it firmly adherent to the abdominal wall, he began to separate it. After separating it for about two inches, he could feel sudden termination of this apparent wall of the sac, and on closer inspection he found that he had to deal with a broad band about four inches wide, which he continued to loosen from the abdominal wall, and finally pushed it up to one side, when he exposed the

real sac. The tumor had very extensive adhesions, and was removed with much difficulty, and also a great deal of hemorrhage, and was found to be a sloughing ovarian tumor. The broad band was attached to the symphysis pubis and to the bladder, from which Dr. Sims dissected it where it was quite thick, and as it extended upward it diminished in thickness, becoming thinner and thinner, until, near the umbilicus, it was about as thin as ordinary tissue-paper: throughout its whole extent it was not particularly vascular. He was unable to give an opinion concerning its exact nature, and the specimen was referred to the Committee on Microscopy.

NEW REMEDIES AND CLINICAL NOTES.

NEW PEPSIN PREPARATION.—A new pepsin has been placed in the market by the well-known manufacturing house of William F. Kidder & Co., of New York, under the name of Kidder's Crust Pepsin. It is in scales, and is non-hygroscopic under ordinary circumstances. In its power of dissolving albuminoids, animal tissues, or diphtheritic membrane, this form of pepsin, it is claimed, is twice the strength of any of the ordinary makes of pepsin, as shown by the albumen test. It is quite uniform in composition, free from salt, sugar of milk, and peptones. By actual test, one part was found to dissolve from twelve hundred to fifteen hundred parts of coagulated egg-albumen. The chemist of the Brooklyn Board of Health states that when tested with the beef-process it digests double the quantity that any other pepsin in the market will. Saccharated pepsin, U.S.P., can be made by adding nineteen grains of sugar of milk to one grain of Kidder's pepsin. In this manner of preparing saccharated pepsin it is said that only one-sixth as much is used of this form of pepsin as would be required of other makes. As the price will not be higher than that of other kinds, it is evident that this will be a cheap as well as an efficient preparation.

ANTIPYRIN AS A HÆMOSTATIC.—E. Casati (*Raccoglitore Medico*, August, 1885) reports the successful application of antipyrin in four- and five-per-cent. solutions as a hæmostatic. The results attained by its use seem to warrant the following conclusions: 1. Antipyrin is a powerful hæmostatic. 2. It is superior to perchloride of iron, because after its use the wound remains entirely clean. 3. It is superior to ergot, because only in extremely large doses does it manifest a toxic action, while, according to Huchard, it exerts a hæmostatic action whether applied directly to the bleeding part or administered internally. 4. In many cases it is to be preferred on account of its antipyretic as also perhaps for its antiseptic effect. 5. The hæmostatic action is manifested in a very short time. 6. Further observation is necessary to determine its value in controlling secondary hemorrhage. (*Gazetta degli Ospitali*, September 30, 1885.)—*Practitioner.*

A CLASSICAL REMEDY FOR HICCOUGH.—Dr. A. G. Gibson (*Edinburgh Medical Journal*, April, 1886) recommends tickling the nose in a case of hiccough. It is not necessary always to cause sneezing to interrupt the spasm of the diaphragm, but if sneezing should occur the hiccough stops at once. This is in accordance with the aphorism of Hippocrates,—

*Ὑπὸ λυγμοῦ ἐχομένῳ πταρμοὶ ἐπιγενόμενοι, λύουσι τὸν λυγμόν,—**

which Mr. Gibson renders, "Sneezing, occurring after hiccough, removes the hiccough."

MISCELLANY.

AMERICAN MEDICAL ASSOCIATION. *Special Notice.* To delegates and others who will attend the meeting of the American Medical Association, St. Louis, May 4 to 8.—Parties located east of Buffalo, Niagara Falls, Pittsburg, and Parkersburg will apply by mail to Secretary of Trunk Line Committee, 346 Broadway, N.Y., for certificates. Parties west of points named above and east of the Mississippi River and north of the Ohio River will apply to George H. Daniels, Commissioner C. P. C., Chicago, Ill., for certificates. Parties south of the Ohio River and east of the Mississippi River will apply to M. Slaughter, Commissioner, Richmond, Va. Parties from Missouri River points, and from Chicago, will apply to E. P. Wilson, Arbitrator, Chicago. Points in the West and local points on the lines centring in St. Louis will be arranged for by agent at starting-point or upon arrival here.

Delegates in making application to the above-named persons for a certificate must not forget to enclose a two-cent stamp to pay postage on the return letter enclosing to them the certificate. This must be done to insure the certificate being sent. Any delegate who fails, after making every effort, to get a certificate in due form, will take a receipt from the Ticket Agent at the point from which he starts, for amount of full fare paid by him coming to the meeting; and in this receipt be particular to have named the form and number of ticket, and the road over which he will come. If not directly on one of the lines entering into this arrangement of reduced rates, pay your fare only to it, and then pay your full fare from that point, securing your

* Littré, Œuvres complètes d'Hippocrate, tome quatrième, p. 566. Paris, 1844.

certificate or receipt as above directed. State, County, or City Societies can apply for the number of certificates they may wish, and have the number wanted sent in one envelope, instead of applying individually.

Round-trip tickets from Chicago, Ill., also from New York, Richmond, Va., and Washington City, D.C., by Chesapeake and Ohio Railroad.

Members of the American Medical Association, or members of any medical societies, who may see the above, will please report it to individual members, or their societies, and try to get a notice of same in their city or county newspaper.

R. M. JORDAN, M.D.,
Chairman Transportation Committee,
St. Louis, Mo.

RESIDENT PHYSICIANS FOR THE PHILADELPHIA HOSPITAL.—At the meeting of the Guardians of the Poor held April 26 the following sixteen out of thirty-six candidates examined were elected resident physicians of the Almshouse. They are named in the order of merit: Harriet W. Brooke, E. Matlack, W. S. Shimer, C. E. Woodruff, A. M. Seymour, W. C. Albertson, A. J. Smith, J. E. Porter, H. B. Moore, W. A. N. Dorland, Helena J. Price, W. E. Parke, M. J. Donohoe, N. B. Jamison, T. Diller, E. T. Brady.

THE ILLINOIS STATE BOARD OF HEALTH has turned its attention to medical schools, and, as reported in the daily press, will hereafter refuse to recognize diplomas from medical schools which annually, for a period of five years, graduate forty-five per cent. of their aggregate matriculates. This rule may act with great hardship upon the innocent holder of a diploma obtained in good faith from a school which, for some reason or other, experiences a notable reduction in its classes.

DR. JOHN S. BILLINGS, Surgeon U.S.A., has been invited to deliver the address in Medicine before the British Medical Association, in the place of Dr. Austin Flint, deceased. This is a well-deserved compliment not alone to Dr. Billings, but also to American medicine, which he will fitly represent.

THE AMERICAN LARYNGOLOGICAL ASSOCIATION will hold its Eighth Annual Meeting in the hall of the College of Physicians, Philadelphia, on May 27, and remain in session for three days. Harrison Allen, M.D., President of the Association, will preside.

THE AMERICAN MEDICAL ASSOCIATION.—The Rush Monument Committee will meet on Monday, May 3, at 4 P.M., in the large parlor of the Lindell House, St. Louis, Missouri, which will be the head-quarters of the Committee during the meeting of the Association.

THE AMERICAN CLIMATOLOGICAL ASSOCIATION will meet in Philadelphia on the 9th and 10th instants, at the Hall of the College of Physicians. William Pepper, M.D., is President of the Association, and Dr. J. G. Walker Secretary.

PENNSYLVANIA HOSPITAL.—At a meeting of the Board of Managers held April 26, Dr. Edward G. Rhoads was elected Resident Physician. The annual meeting of the contributors will be held on the 3d instant.

JEFFERSON MEDICAL COLLEGE. — The Board of Trustees, on April 26, elected Wm. S. Forbes Professor of Anatomy, at a special meeting called for the purpose.

THE AMERICAN SURGICAL ASSOCIATION held its Sixth Annual Meeting in Washington during the past week. A report of the meeting will appear in the next issue of the *Times*.

OFFICIAL LIST

OF CHANGES IN THE STATIONS AND DUTIES OF OFFICERS SERVING IN THE MEDICAL DEPARTMENT U.S. ARMY FROM APRIL 11, 1886, *TO APRIL* 24, 1886.

MAJOR M. K. TAYLOR, SURGEON.—Granted one month's leave of absence on surgeon's certificate of disability, with permission to leave the limits of the department. S. O. 39, Department of the Missouri, April 16, 1886.

CAPTAIN J. H. PATZKI, ASSISTANT-SURGEON.—Relieved from duty at Jackson Barracks, Louisiana, and ordered for duty as post-surgeon at Mount Vernon Barracks, Alabama. S. O. 75, Department of the East, April 12, 1886.

CAPTAIN JOHN VAN R. HOFF, ASSISTANT-SURGEON.—Leave of absence extended eleven months, with permission to leave the United States. S. O. 85, A. G. O., April 12, 1886.

CAPTAIN RICHARDS BARNETT, ASSISTANT-SURGEON.—Granted leave of absence for two months. S. O. 16, Division of the Atlantic, April 12, 1886.

CAPTAIN WILLIAM W. GRAY, ASSISTANT-SURGEON.—Ordered to Fort Maginnis, Montana Territory.

CAPTAIN EZRA WOODRUFF, ASSISTANT-SURGEON.—Ordered to Fort Missoula, Montana Territory.

FIRST-LIEUTENANT REUBEN L. ROBERTSON, ASSISTANT-SURGEON.—Ordered for temporary duty at Fort Snelling, Minnesota.
S. O. 33, Department of Dakota, April 16, 1886.

FIRST-LIEUTENANT PHILIP G. WALES, ASSISTANT-SURGEON.—Granted leave of absence for one month. S. O. 56, Department of the Columbia, April 8, 1886.

FIRST-LIEUTENANT PHILIP G. WALES, ASSISTANT-SURGEON. Granted leave of absence for two months. S. O. 85, A. G. O., April 12, 1886.

LIST OF CHANGES IN THE MEDICAL CORPS OF THE U.S. NAVY FROM APRIL 11, 1886, *TO APRIL* 24, 1886.

P. A. LOVERING, PASSED ASSISTANT-SURGEON.—Ordered to Navy Yard, New York.

CLEMENT BIDDLE, PASSED ASSISTANT-SURGEON.—Detached from "Monocacy," ordered home and wait orders.

H. E. AMES, PASSED ASSISTANT-SURGEON.—Detached from Navy Yard, New York, and ordered to "Monocacy."

M. H. CRAWFORD, PASSED ASSISTANT-SURGEON.—Ordered to Naval Hospital at Washington.

MEDICAL-DIRECTOR W. T. HORD, U.S.N., and MEDICAL-INSPECTOR J. C. SPEAR, U.S.N.—Delegates to the American Medical Association to be held at St. Louis on May 5, 1886.